

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper- Second-class postage paid at Boston, Mass.

Vol. III No. 16

April 23, 1969

Price: \$9/year



The TC700 electronic teller terminal is the newest member of Burroughs' terminal-computer family.

Burroughs Again Expands Terminal-Computer Family

DETROIT — A new teller terminal computer, based on the TC500 terminal, has been announced by Burroughs Corp. to serve the banking industry and other industries where multi-function terminals are needed in a window-oriented or counter-oriented business.

The unit can operate either as a remote terminal with Burroughs computers or with those of any other manufacturer who meets industry specifications, and is ideally suited to the real-time processing environment, Ray Macdonald, Burroughs president, said.

Exceeds Standards

The terminal surpasses the specifications established by the special on-line committee of the National Association of Mutual

Savings Banks and the National Society of Controllers and Financial Officers of Savings Institutions, Macdonald said. He added that he believed this was "the first teller console to meet industry specifications."

The unit uses the standard communication procedures proposed by the USA Standards Institute and the International Standards Organization and adopted by the European Computer Manufacturers Association. The unit will operate with all computers which meet these specifications, Macdonald said.

Programming

Programming for the device is handled through "firmware," a sequence of instructions, alterable by Burroughs or the user, which calls up the microprograms used to perform the unit's functions. Burroughs will supply software programming or customer training on a fee basis, a policy established for both the TC500 and the L2000.

The system consists of five major modules: operator keyboard, memory unit, disk, logic circuitry, I/O controls, and high-speed printer.

Prices for the system range from \$8,840 to \$13,400, and deliveries will start in January 1970. The initial demonstration of the system will take place at the Miami convention of the Savings & Loan Controllers, May 19-21.

Plug-to-Plug Compatibility Wins Defense Department's Support

WASHINGTON, D.C. — The Defense Department is taking immediate action to acquire peripherals competitively whenever technically feasible.

Robert G. Moot, assistant secretary of defense, has told the Army, the Navy, the Air Force, and other defense groups to implement the policy immediately for magnetic tape stations and other cases where plug-to-plug compatibility can be readily established. He also told them that outside vendors of plug-to-plug compatibles should be given equal consideration with the vendors

of the central processing units in all cases where peripherals are being added or replaced.

A Defense Department spokesman told CW that the main area of plug-to-plug compatibility currently being considered involved magnetic tape drives and disk drives. Other areas would include page readers and optical readers which were not necessarily direct replacement vendor systems, he said.

The Defense Department intends to watch carefully the problems that arise, particularly with regard to the responsibility

for maintenance of the multi-vendor systems, he said.

The introduction of competition into this area follows an argument pressed by the independent hardware companies for a year.

Qualification List

The Defense Department called on the General Services Administration to prepare a list of peripherals which would show for each one the central processing units with which it can be connected. The suggested list would

(Continued on Page 5)

GE Announces 2 High-Stack, Multiple-Spindle Disk Drives

PHOENIX — GE has announced two new mass-memory devices aimed at users of large-scale systems, including time-sharing and other applications requiring greater quantities of storage than GE previously offered.

The DSS-170 is competition for IBM's nine-drive 2314s. It is also a nine-drive unit with 11-disk high stacks.

It has an average access time of

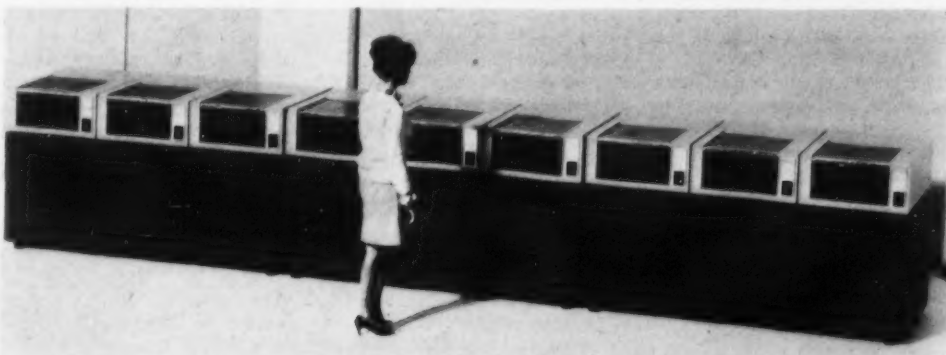
75 msec, GE said, and transfers at the rate of 416,000 characters per second. Its capacity is 220,000,000 characters. GE has priced it to lease at \$5,675 per month, the same as the larger of the 2314s.

DSS-167 is a five-drive device with a capacity of 90,000,000 characters, expandable to 120,000,000. Access time of the DSS-167 is also 75 msec, but transfer rate is halved, to

208,000 characters per second. The 90,000,000-character storage device will lease for \$3,185 per month, with the expansion costing an extra \$675 per month.

The company expects that the new devices will extend application of its Integrated Data Store (I-D-S) data management system.

Deliveries of the new units are expected to begin in 15 months.



GE's new DSS-167 disk storage subsystem uses high-stack disk packs.

IBM's 1130 and 1800 Markets Attacked By Compatible Computer, 60% Price Cut

ORANGE, Calif. — A computer aimed at the industrial automation market and said to be fully compatible with both the IBM 1800 and the 1130 has been developed by General Automation, Inc.

The GA 18/30 has a 16-bit word length, with memory available in increments of 4K to 32K. Direct addressing to the full 32K of 960-nsec core is provided.

The company claims that the machine will process over 400,000 instructions per second.

The instruction repertoire is said to be fully compatible with both the 1800 and the 1130, plus a class of register-to-register commands. Sixteen general-purpose registers are provided.

The GA 18/30 is designed to supervise industrial computation. Standard peripherals include tape, disks, cards, printers, and teletypewriters. The I/O system is said to include 16 automatic program interrupt levels, programmable interrupts, and direct-to-memory I/O chan-

nels.

Software includes assemblers, compilers, real-time monitors, and control programs, a company spokesman said.

The basic system price, with paper tape and keyboard, will be "less than \$20,000," he said, adding that the price of an 18/30 system is "less than 40% of the equivalent IBM 1800."

Deliveries are scheduled to begin this summer.

General Automation has offices at 706 W. Katella St. here.

On the Inside

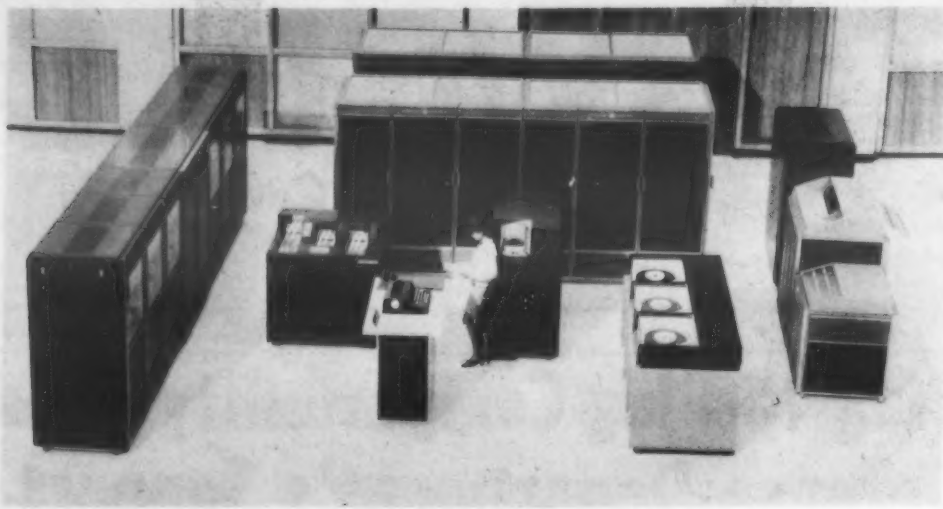
Downtime Jumps 3000%
After System Is Audited

— Page 4

Have the B500s Bridged
The Generation Gap?

— Page 9

Applications	12
Editorials	8
Education	10
Financial Products	21
Services	6
Software	7
Hardware	17



The GE-615, GE's new medium-scale computer system.

GE's Newest Entry Is a Slower Less-Expensive GE-635 System

PHOENIX — The GE-615 is the latest entry in the medium-scale computer market.

In competition with the IBM 360/50, Univac 1106, and Burroughs 3500, among others, the new processor is essentially a somewhat slowed-down, less-expensive version of the GE-635.

The system is designed for three concurrent modes of operation: multiprogrammed local batch processing, remote batch operation from different-speed terminals, and reactive time-sharing, GE said.

The user of the 635 will be able to use the full line of peripheral equipment available to the larger 600 series processors, a GE spokesman said. The system is controlled by the General Comprehensive Operating System (Gecos) using batch-oriented compilers such as Fortran IV and Texteditor; time-sharing languages including Basic, Fortran, and Cobol; and application software, such as Apt III, Linear Programming, and parts explosion, he said.

The processor cycles one 36-bit word in 2 microseconds and is

said to add 244,000 numbers per second. It is available in sizes of 65K to 256K words.

A system with 65K of main memory, 30 million characters of disk storage, card reader and punch, eight magnetic tapes, 1200-line-per-minute printer, and console typewriter will rent for slightly under \$30,000 per month, he said.

Two communications processors can be used — the Data-net-30 and the new GE-355.

The company expects to start delivering the 615 in June.

Computers-in-Law Institute Set on Software Protection

WASHINGTON, D.C. — A Software Protection Workshop sponsored by the Patent Resources Group, under the direction of the George Washington University Computers-in-law Institute, will be held here at the Hotel America June 2-4.

The program will consist of a discussion of various ways in which software can be protected through patents, trade-secret agreements, and government and private contract arrangements.

The course will be under the direction of Howard R. Popper of Bell Laboratories in conjunction with Professor Irving Kayton. Its primary orientation will be toward lawyers serving computer users and software and

hardware manufacturers. For those who feel a need, a hardware/software technology tutorial will be held during the first morning of the session.

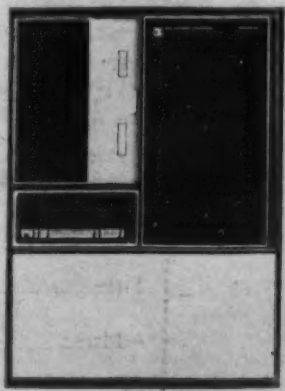
Kayton said that, properly prepared, software patent applications could lighten the burden of the Patent Office and that trade-secret agreements can be worded to remove ambiguities and reveal the true mutual intent

of the parties involved. A discussion of the possible changes in the patent laws and related rulings will be a major part of the second day's discussion. The Nasa data clauses pertinent to software will be one of the topics Wednesday, the final day.

Further information may be obtained from the Patent Resources Group, 2011 I St., Washington, D.C. 20006.

Off-Line Magnetic Tape Serves As Input to Microfilm Recorder

NEWTON UPPER FALLS, Mass. — A microfilm recorder designed to take input from an off-line magnetic tape has been announced by Beta Instrument Corp.



The Beta Com 600.

The Beta COM 600 is built around a Digital Equipment Corp. PDP/8 computer available in either 4K or 8K sizes. The basic system consists of the computer, a tape drive, and a precision CRT film recorder.

The company claims equal capability in forms and graphics reproduction.

Standard features include the ability to accept most print tape formats without reformatting, a 128-character set with upper and lower case letters and proportional spacing, programmable tabbing and skipping, and graphics, a Beta spokesman said.

The price will be about \$125,000, with an optional rental plan, he said. Production deliveries are scheduled to begin Nov. 1.

The company has offices at 377 Elliot St. here.

1130 USERS

\$90

- General Purpose SORT
- FORTRAN Aids

purchase

- Variable Cross-Reference
- Statement No. Resequencing
- BCD/EBCDIC Conversion
- Free-form Read Subroutine

FREE: 5-in-a-row Game Program
SCIENTIFIC CALCULATIONS, Inc.

110 Allens Creek Rd.
Rochester, N.Y. 14618



- ☐ Send Utility Package
☐ Bill Us
☐ Payment Enclosed
☐ Send Info. on Utility Package
☐ Send 5-in-a-row Free

NAME _____

TITLE _____

COMPANY _____

CITY _____

SOFTWARE CLEARING HOUSE

If you want to sell proprietary software programs

OR

You are looking for software programs

USE

A professional EDP software clearing house

Contact

AUTOMATED INFORMATION SYSTEMS, INC.

BOX 304

NEEDHAM HEIGHTS 94, MASS. 02194

617-449-2220

Branches in Springfield, Mass. and Ridgewood, New Jersey

**Reduce your
keypunching costs by 50%
...with no delay**

Diversified Data Services Jamaica Ltd., our subsidiary, offers keypunching verification, card to tape, and clerical services—for volumes of 50,000 or more—at one-half the New York rate.

Guaranteed one week turnaround.

For further information, please call Mr. Allen Scott at (212) 889-1800.

dis Diversified Data Services and Sciences Inc.
105 MADISON AVENUE • NEW YORK, NEW YORK 10016

DATA COMMUNICATION IDEAS?

Talk to Tally

Need a communications buffer for your 360? The Tally 360 Communications Buffer offers you a fast and economical means of batching your branch office data for efficient high speed entry to an IBM 360 Computer via the multiplex channel. Transmission speed over the telephone network is 120 char/sec; computer throughput is 1600 char/sec.

Write or call Tally, 1310 Mercer Street, Seattle, Washington 98108. Phone: 206-524-0780.

Subscribe to Computerworld

Standard packs more core.

Don't take one bit less.

More useful core, more usable core. That's the fourth generation. Micro-programmed to take maximum advantage of every bit.

Enough core for large sorts, large user programs, advanced operating systems, Time-Sharing, and Remote Job Entry.

Even more, beyond its basic multiple pass compilers, the IC-4000 offers in-core FORTRAN, virtually eliminating overhead. Produces tremendous increases in speed/volume/throughput. Throughput speeds actually three to four times greater than now possible with machines of comparable cost.

The fourth generation delivers more core. Standard delivers the fourth generation.

IC-4000—a fourth generation computer. 32K word (36 bits). COBOL, FORTRAN, and Sort/Merge. 1401, 7040/7044, 7090/7094 emulation. Other models for computer science study, time-sharing.

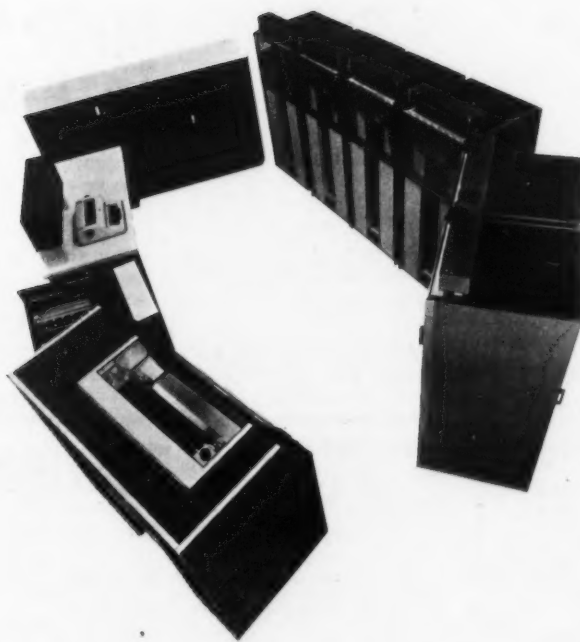
Leasing starts at \$4131 per month.

Call William W. Otterson, Manager of Marketing, collect at (213) 387-5267 or write for full documentation.

Standard Computer

SALES OFFICES:

Chicago: (312) 726-0277 • Dallas: (214) 239-9267 •
Denver: (303) 428-0529 • Detroit: (313) 565-4871 •
Los Angeles: (213) 387-5267 • Minneapolis: (612)
926-0706 • New York: (212) 661-1834 • Philadelphia:
(215) 563-6350 • San Jose: (408) 294-7150 • Waltham:
(617) 891-5083



Standard Computer Corporation
1411 West Olympic Boulevard
Los Angeles, California 90015
Please rush documentation
on your fourth generation IC-4000.

Name _____
Title _____ Company _____
Address _____
City _____
State _____ Zip _____

System Was Running Fine

Then Came the Audit and Downtime Jumped 3000%

By Peter L. Briggs

CW Staff Writer

WALTHAM, Mass. — A strange tale of the problems which a computer manufacturer's policy can create for a user came to light this month. The procedure of "system audit," used by certain manufacturers to "bring the equipment up to factory specifications," has made operations very difficult for one time-sharing service here.

System Audit and Support

The user asked *Computerworld* to examine his records of downtime and correlate this information with the timing of the

"audit." The figures show (see chart) that after the audit was performed, system downtime for various reasons increased during normal working hours about 3000% (30 to 1) over the average for the previous three months.

An additional problem, and one faced by most non-IBM users, is the lack of manpower for hardware support. For several months the user had been complaining of the slowness with which the manufacturer responded to service calls and the lack of availability of spare parts.

According to the user, at least

Many manufacturers perform a periodic overhaul of each customer's machine to bring the machine up to "factory specifications." This periodic, usually annual, functional checkout is called system audit, and the customer is frequently not informed when it is being done. One common result of such audits is a sudden rash of equipment failures from a machine which has been functioning well for some time.

some good things have come out of this series of problems since the audit. The manufacturer has agreed to speed up response time for calls, and, in fact, the service has been almost immediate since then. The manufacturer has had at least one qualified expert on the user's premises within two hours of the call.

Real-Time Maintenance

The manufacturer admitted, according to the user, that it had not really learned to cope with the implications of a real-time system and its requirements. It was felt that a new schedule for

maintenance and support would have to be developed but that this would require some time. In the interim, the user told *Computerworld*, "Communications have been enormously improved since the audit. We now get response which is significantly better than the two to four hours we had to wait for someone of any qualification level to arrive." He felt that this, at least in part, made up for the disastrous results of the audit.

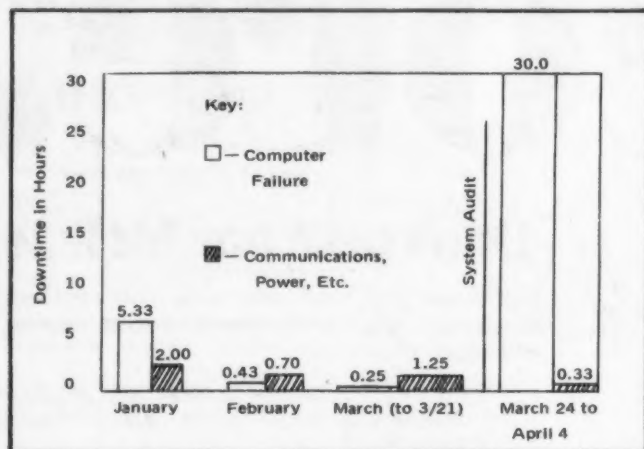
The user also pointed out that the causes for normal downtime, such as miscellaneous equipment failures related to telephones, electrical power, weather, and

human malfunctions, were almost as serious as the hardware failures.

Four and a quarter hours of downtime was experienced over the preceding three months for this type of problem. The user feels that utilities like the telephone company and the power companies must learn to respond more quickly to this type of real-time emergency. These hours of lost time can seriously hinder the operation of many customers using the system for on-line processing, he said.

"Audit" Approach Hurts

The user pointed out that there is a serious question involving the validity of the "audit" approach to system maintenance. He feels that, "Any piece of equipment as complicated and sensitive as a computer should not be tinkered with, even by skilled people, unless it is absolutely necessary."



An Independent Disk Drive Manufacturer Wins Slot on Federal Supply Price List

NEW YORK — The General Services Administration has awarded a contract to MAI Equipment Corp. which enables the company to enter the Federal Supply Price List as an authorized disk supplier, the company said recently.

Drives Cheaper Than IBM's

The drives being offered, the MAI 2301 disks, are produced for MAI by Peripheral Systems Corp., a Memorex subsidiary, and are basically similar to the Memorex 630 drives. The drives are being offered for \$475 a month, significantly less than the \$590 a month price of the equivalent IBM equipment. The 630 drives normally rent for \$500 per month for commercial customers.

The drives are completely compatible with the IBM 2311 for

most models of the IBM 360, the company told *Computerworld*, and have an average access time of only 50 milliseconds as compared with 75 milliseconds for the IBM unit.

MAI also was recently awarded

a contract for punched-card equipment from the GSA, the largest order in MAI's history, the company said. The \$3.6 million contract is for the lease, sale, and servicing of punched-card equipment.

Input Conference Planned To Aid Developing Nation

NEW YORK — A conference, "Improving Computer Input," will be held in Montego Bay, Jamaica, April 28 to May 2.

Sponsored jointly by Adelphi University, Garden City, N.Y., and the Jamaica Industrial Development Corp., the conference will focus upon personnel problems in the computing field, and the role of computer science in a

developing nation.

Topics to be discussed include "Clerical Personnel — Selection and Training," "Professional Personnel — Organization and Management," "The Personnel Problems of Computer Network Administration," "Data Processing and Corporate Decision-Making," and "Organization and Administration of Computer Facilities."



COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

TM Reg. U.S. Pat. Off.

Weekly Newspaper — Second Class Postage Paid at Boston, Mass. Published every Wednesday by COMPUTERWORLD, Inc., 60 Austin St., Newton, Mass. 02160. Telephone: (617) 332-5606 & TWX: 710-335-6635. Copyright 1969 by COMPUTERWORLD, Inc.

Alan Taylor, Editor. Robert M. Patterson, News Editor. Evelyn Cowell, Special Supplement Editor. Neal Wilder, National Sales Manager. Margaret Phelan, Circulation Manager. Henry Fling, Art Services Supervisor. Kate Rachstein, Typesetting Services Supervisor.

Patrick J. McGovern, Publisher. W. Walter Boyd, Associate Publisher.

Subscription rates are: \$9 for one year, \$16 for two years. Add \$1 per year for Canada; \$3.50 per year for Foreign. Please send all editorial and subscription material to: COMPUTERWORLD, 60 Austin St., Newton, Mass. 02160. (617) 332-5606.

Reproduction of material appearing in COMPUTERWORLD is strictly forbidden without written permission. Send all requests for permission to the Editor.



COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

SIXTY AUSTIN STREET, NEWTON, MASSACHUSETTS • 02160 • TELEPHONE: (617) 332-5606

Yes, please send me COMPUTERWORLD for . . .

- ☐ 1 Year \$ 9.00
☐ 2 Years \$16.00 ☐ Bill Me
☐ 3 Years \$20.00 ☐ Payment Enclosed

AA

Name																											
Your Title	49																										
Co. Name	57																										
Address	15																										
City	38											51															
Zip Code	2	6	7	8	15	16	17	18	19	20	21	22	23	24	25	26	27										

Return to:
COMPUTERWORLD 60 Austin Street, Newton, Mass. 02160

Please Circle 1 Number
and 1 Letter:

YOUR TITLE AND/OR FUNCTION?

- A. Operational Management (nonengineering)
 B. Computer Professional Staff
 C. Corporate Officers
 D. Engineering Management
 E. Engineering/Scientific
 F. Production/Maintenance
 G. Sales/Marketing
 H. Other _____

COMPANY BUSINESS:

1. Mining or Construction
 2. Manufacturer/Computer or Data System
 3. Manufacturer/Other
 4. Utility
 5. Wholesale/Retail
 6. Finance
 7. Consultants/DP Services
 8. Business Service (except DP)
 9. Educational/Medical/Legal
 10. Government/Military
 11. Other _____



Mouse and Joystick

The mouse, left, and the joystick, both devices for controlling the cursor on Ards and similar CRT displays, provide alternate ways of communicating with computers. Moving the mouse around on a flat surface causes the cursor to follow the motions. The buttons allow the user to input cursor position or its vector value. The joystick provides the same control plus buttons for selecting solid line input and dotted line input and for returning cursor control to the computer. Both are products of Computer Displays Inc., Waltham, Mass.

Plug Compatibility Wins Defense Agency Support

(Continued from Page 1)

be qualified but would allow for certification that a peripheral does, in fact, work successfully.

Liquidated Damages

The department also asked the GSA to add independent component companies to the federal supply schedule and to develop a series of standard "liquidated damages" clauses to handle problems of rendering credit for system downtime, etc.

EMR Computer Cuts 6130 Price By Average 16%

MINNEAPOLIS, Minn. — EMR Computer has announced a price reduction for both purchased and leased systems in its Advance 6130 series.

As a result of economics, a spokesman said, the outright purchase price of 6130 systems has been lowered by an average of 16%. Monthly lease rates have been reduced by approximately 30%, depending on system configuration, he said.

The purchase price of an 8K 6130 processor is now \$39,500, including memory parity and memory protection, high-speed arithmetic instructions, and three hardware index registers, he said.

Such a contract for independent peripherals has recently been issued to MAI for the installation of one of its 2301 disk drives in a government agency (see story on page 4).

User Takes Responsibility

One of the main problems involved in using independent units is maintenance responsibility. Moot made it clear that the user should accept responsibility for the total operation of the system. In previous contracts the vendor was responsible.

Immediate Action

He also specifically asked the defense agencies to implement the policy immediately, without waiting for the GSA to prepare the qualification list and the changes to the contracts.

360 SALARY SERVICE SYSTEM

Designed Expressly for Data Processing Service Organizations

Processing time including all updating maintenance and reports averages less than two seconds per pay per employee. Flexibilities include 14 deduction fields and 10 accumulators for any period; Multi-state tax routine; DDA and ARP interfaces. Processing options include spooling, multiprogramming and multiple printers. Written for 65K (or larger) DOS system. For further information contact Jim Saviano.

OPERATIONS ANALYSIS INC.

Management Science Consultants
Suite 503 / 28 Pleasant Street
Worcester, Massachusetts 01608

an equal opportunity employer

On- or Off-Line Printing Handled Electrostatically

CLEVELAND — An electrostatic printer has been developed for computer terminal use by Clevite Corp.

The Model 4800 can handle alphanumerics and graphics simultaneously at rates up to 4,800 alphanumeric lines per minute, a company spokesman said.

The printer will accept, as input, serial or parallel digital data from computers, magnetic tape, card readers, raster-type CRT display memories, disks and drums, and communications lines, producing chart and graph output, as well as the conventional alphanumeric printouts, he said.

Writing is done by 600 charge-

ing styli, any or all of which may be addressed in less than 1 msec and caused to write, he said. Graphics on a standard 8-1/2 by 11 in. page is in the form of 500,000 dot locations.

Typical applications will include transcription of CRT information onto hard copy, the spokesman said, and as replacements for line printers and Teletypes.

The 4800 is tentatively priced at \$15,000. OEM-sized lots are initially anticipated, and the company expects to provide interfaces, he said.

The company expects to be able to deliver from production in the fourth quarter, he said.

Clevite has offices at 37th and Perkins Streets here.



Clevite 4800 high-speed electrostatic printer

Parking Lot to Be Computerized

NEW YORK — The Port of New York Authority will install a computer in the LaGuardia Airport public parking lots later this year.

The system, which will include a centrally located Control Data 1700 computer and nine remote terminals at the parking lot exits, will automatically calculate and display the parking fee to the patron and eliminate the

present time-consuming manual calculation by the attendant.

The new system also will automatically gather statistical and accounting data.

CAN YOU REALLY AFFORD TO SETTLE FOR LESS---



---THAN THE MOBILE CONVENIENCE AND RELIABILITY OF THE ADT 233 TIME-SHARING TERMINAL?

- Advanced, digital coupler design assures error-free performance.
- Integrated coupler provides compact convenience.
- Only one a.c. power cord — no cables to connect to external coupler or black box.
- Your telephone brings a powerful computer to your own desk.
- Twice as many ADT 233 terminals can be procured on the budget you would expect to use for other terminals.

Write for Details

ANDERSON JACOBSON, INC.
2235 Mora Drive
Mountain View,
Calif. 94040
TELEPHONE:
(415) 968-2400



TLW Computerworld Corner COMPUTERS FOR SALE

IBM — 1401 B4-Disk

A complete system, with disks and console inquiry, Printer 600 LPM, Punch/Read, Model 1. Immediate Delivery.

IBM — 12K — 1401

1401-1402-1403-1406 — A complete System with all features.

IBM — 7070 — 10K

A nice system available for immediate Delivery. Excellent for second system.

IBM — 1440 — 12K

A large 12K system with many excellent features, 1442, 1443 (144 print positions), 1447 and three 1311 disks, June Delivery.

IBM — 1903

A paper tape reader for computer input.

TLW does the total job. We have experience and satisfied customers.

Box 29763, Atlanta, Ga.
(404) 633-2579

TLW
COMPUTER
INDUSTRIES

New Datanet System Has Better I/O Volume, Speed

PHOENIX — A new data communications system, the Datanet-355, has been designed to provide improved input/output volume and speed.

The new unit is described as having a 1-μsec main memory, in sizes of 16K or 32K 18-bit words, all individually addressable. Different word lengths can be mixed and fully packed in storage.

The unit's I/O multiplexor is interrupt-driven to provide demand processing and is designed to handle up to 16 adapters, with an aggregate data rate of

bits/sec range, while the high-speed adapter has a range of 75-50,000 bits/sec.

Datanet-355 operates under the General Electric Comprehensive Operating System (Gecos) for I/O control. This is said to provide an interface which eliminates the need for special system programming.

The unit leases for \$4,000 per month, with the price going up as the configuration grows. It is scheduled for mid-1970 shipment.

General Electric Co., Phoenix, Arizona.

2-Million-Bit Disk

A 2-million-bit, head-per-track disk drive has been designed for core expansion on small computers, for use as buffer memory, and for extension of the capabilities of accounting machines and calculators.

The Model 7064 disk drive has an access time of 16.5 msec. It records at a density of 1,000 bits/in.

Cost per bit is said to be under 3 cents.

Information Storage, Inc., 8260 E. Eight Mile Road, Detroit, Mich. 48234.

CRT Display Capability

A CRT display capability

New Products

has been added to System Associates' 2113 data acquisition and control system which is offered for use on the IBM 1130.

The system is said to be suitable for use in fields such as heavy manufacturing, chemicals, utilities, pipelines, and plastics. The SYS-2113-10 CRT displays data on a 10-in. screen more quickly than it can be done on an on-line plotter.

SYS Associates, Inc., 2460 Lemoine Ave., Fort Lee, N.J. 07024.

Typewriter Plotter

A typewriter plotting system has been developed for use with Fortran on the IBM 1130.

The system consists of a software package plus a Selectric typehead containing 38 special characters in addition to the standard Fortran set. Plotting precision of about one thirtieth of an inch, both vertical and horizontal, is claimed.

The software can determine scales and coordinates automatically, or the programmer can determine output format

himself, according to the company.

The system is available now, and the company is preparing a 360 version, a spokesman said.

TPLot Corp., 55 Mitchell Blvd., San Rafael, Calif. 94903.

High-Speed Buffer

Users of the Varian 620/i computer are offered the company's new 620/i-21 high-speed buffer system that is said nearly to triple the computer's I/O capabilities.

The new unit consists of one or more 1-μsec memory banks, plus a control unit that allows direct access either by the computer or by high-speed peripheral devices.

The buffer system is designed to allow the 620/i to transfer at up to 770,000 Hz, without cycle-stealing or program interrupt.

Applications will include process control, displays, data acquisition, or any use that involves high speed and volume data transfer.

The buffer can have memory from 4K to 16K 16- or 18-bit words; in combination with dedicated computer memory, a 620/i can use up to 20K total system memory.

Varian Data Machine, 2722 Michelson Drive, Irvine, Calif. 92664.

Digital Data Acquisition

A new system for analog and digital data acquisition and control has been developed for a number of scientific purposes. Named Adac, the 2016 series acquires low- and/or high-level analog signals, and is said to enable the input of on-line functions, such as editing and producing digitized computer-compatible output.

The basic system consists of an analog input section, and intercoupler, a small general-purpose computer, and an ASR-33 teletypewriter. It costs under \$30,000.

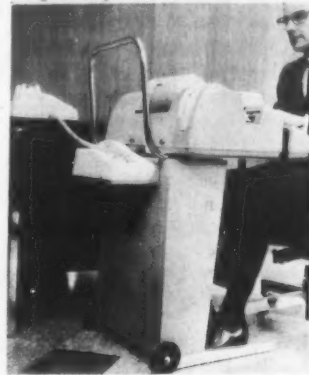
Astrodata, Inc., P.O. Box 3003, 240 E. Palais Rd., Anaheim, Calif. 92803.

Modified Teletype

A portable modified Model 33 Teletype and acoustic terminal has been announced that can be easily rolled up- and downstairs.

Options include paper tape I/O, with or without automatic control, and separate or built-in acoustic data set with originate or originate/answer mode, maintains the company.

Price is \$1,475 (\$52 per month) singly, or \$1,095 (\$38) in quantity.



ComData, Inc., 7544 W. Oakton St., Niles, Ill. 60648.

Low-Cost Modem

A small, low-cost modem, the TT-103 data set, is described as a low-speed modem that transmits and receives at 300 bits/sec.

The company says that it is possible to package the modem in a single card measuring about 4-1/2 in. by 10 in.

The unit is said to provide full-duplex data transmission over a two-wire circuit, and is compatible with the Bell 103, according to the company.

Cost is \$200 in small-quantity lots, scaled down for large quantities.

Tel-Tech Corp., 9170 Brookville Road, Silver Spring, Md. 20910.

Miniaturized Calculator

A miniaturized calculator has been announced by the American subsidiary of Hayakawa Electric Co., Ltd. The unit is designed for American use. It



measures 4-5/8 in. by 9-1/2 in. and weighs 3-1/8 lb., according to the company.

While silent, it can add, subtract, multiply, divide, and perform mixed calculations. It also features a true credit balance, the company claims.

Sharp Electronics Corp., Carlstadt, N.J.

ADVERTISERS,

TAKE ADVANTAGE OF US

...but hurry!

We're going to the Spring Joint Computer Conference with armloads of *COMPUTERWORLD*s to give away. What this means to you is a 5 to 6 thousand increase over our 30,000 (plus) circulation. So **TAKE ADVANTAGE OF US!** Let us advertise your product right on the spot. But hurry... our closing dates have been altered for these two special issues only.

SJCC PREVIEW ISSUE

Issue date — May 14th (mailed May 7th)

Color closing — April 18th*

Pub. set closing — April 25th*

Black & White closing — April 28th*

SJCC SHOW ISSUE

Issue date — May 21st (mailed May 14th)

Color closing — April 25th*

Pub. set closing — May 2nd*

Black & White closing — May 5th

* Space reservations, copy, and/or mechanicals

These are early closings, but think about this; the monthlies are already closed for SJCC. **ONLY** in *COMPUTERWORLD* do you have the chance to improve your product ad up to the end of April. That's why we say... the only thing faster than the computer industry is *COMPUTERWORLD*... the **FIRST** and **ONLY** newsweekly for the computer industry.

All orders, mechanicals must be received at *COMPUTERWORLD*, 60 Austin St., Newton Mass. 02160, by 5 p.m. EST on closing date stated. Any exceptions must be confirmed IN WRITING by the Computerworld Advertising Department.

GE-225, 301, 1004, 1107 FOR SALE

IPS has several non-IBM systems for sale. Included are a GE-225 8K tape system, CDC 3100 16K tape/card/printer system, H-200 8K 3-tape system, RCA 301 20K tape system, a Univac 1004-I, and a Univac 1107 65K tape/drum system. Most computers have card and printer I/O. We are looking for an RCA 301 40K tape system and a large H-200 tape system. For prices, delivery, and details, please write or call.

IPS

INFORMATION PROCESSING SYSTEMS, INC.

200 WEST 57TH STREET NEW YORK N.Y. 10019 (212) 246-2267

'Systems 69' Congress Is Set for Munich This Fall

JERSEY CITY, N.J. — American companies involved in instrumentation, data processing, and systems management may introduce their latest technical developments to the European market when the Systems 69 scientific congress takes place Nov. 10-15 in Munich, Germany.

The week-long series of symposia and international exhibition is concerned with new technological developments and future problems in systems management, information systems, space research, marine technology, raw materials and energy sources, and traffic and city planning.

According to Gerald G. Kallman Associates, U.S. representa-

tives for the Munich Fair Authority, the Federal German Ministry for Scientific Research is cooperating with the Association for Future Problems in organizing the symposia.

Experts from the United States and Europe, including Dr. Jacques Piccard and Cmdr. M. Scott Carpenter, are being lined up for the scientific sessions.

Company displays in the various technical areas will be presented in the exhibition halls adjacent to the Kongresshalle of the Munich Fair Grounds, Kallman noted. Space is available on a first-come, first-served basis. Additional information can be obtained from Kallman Associates, 30 Journal Square, Jersey City, N.J. 07306.

ACM Denies SicSic Reinstatement

NEW YORK — President Bernard A. Galler of the Association for Computing Machinery, responding to a demand from a New York group that the Special Interest Committee on the Social Implications of Computing be immediately reinstated, warned the group not to use the ACM name and denied its demand. Galler told Robert M. Shapiro, who said he was SicSic secretary, that the society

had been completely surprised to hear Shapiro's claim and about the mailing list in his possession. The society said it had been unable to confirm the validity of Shapiro's claim from any files in its possession.

Galler pointed out that SicSic had failed to provide required reports to the ACM, and therefore had been dissolved. While welcoming the interest of Shapiro and his followers, he also directed attention to the activities of Robert Bigelow of Winchester, Mass., who is attempting to form a new SicSic, and of Dr. Anatole Holt, who had been the chairman of the previous ACM SicSic and now is ACM's representative on the Afips Committee on the Social Implications of Computers.

Codasyl to Mark 10th Anniversary

ATLANTA — The Conference on Data Systems Languages (Codasyl) will mark its 10th anniversary with a conference to be held at the Statler Hilton Hotel in Washington, D.C., on May 27 and 28.

This meeting will be primarily oriented toward future needs of the data processing community.

The agenda of the meeting will include the following topics:

1. Data Descriptive Languages.
 2. Data Base Extensions to Cobol.
 3. Procedural vs. non-Procedural Languages.
 4. Work toward one universal computer language.
 5. Data Processing Standardization Efforts.
 6. The Codasyl Survey on Generalized Data Base Systems.
- John J. Jones, P.O. Box 50204, Atlanta, Ga. 30302, is chairman of the executive committee.

Why you should join PICS

PICS is the first fully-computerized nationwide service that matches you with fast-breaking executive, technical and professional career opportunities as they occur. Last year the PICS computers scored 16,000 matches. 7,000 of PICS' 30,000 members accepted new jobs. No employment fees. For details call Western Union Operator 77 or mail coupon.

PICS, Dept. 809, Bennington, Vt. 05201.

I'm interested. Send full details.

Name _____
Address _____
City _____ State _____ Zip _____

WE ARE NOT

COMPUTER TIME?

A SERVICE BUREAU

JUST A REAL TIME SHOP WITH COSTLY IDLE BACK-UP

N.Y.C. & L.A.

2-512K 360-50's 2314's 2311's 1410/7010 Emv' .don 7 & 9 TRACK TO 1600 1600 BPI (IL's & VI's) 2701's 2703 2260's TELE-TYPES

DETROIT

64K 360/30 2311's 7&9 TRACK 2703 2260's

QUICK DRAW — COMPUTERIZED PROGRAM FLOW CHART AVAILABLE OS-DOS COBOL FORTRAN PL/I GPSS MPS PERT ETC.

NYC — 212-425-6633 X 19
LA — 714-776-6580
DET. — 313-272-5300

H
E
L
P

A NEW GENERAL PURPOSE PAYROLL AT 1/4th USUAL COST...ALL STANDARD FEATURES...PLUS

Minimum Computer Equipment Configuration —

- IBM System 360 Model 30 or above
- 32K Core Including Supervisor
- Either Disk or Tape Oriented
- Disk May be Either 2311 or 2314
- 3 Tape Drives for Totally Tape Oriented System

A Multiple Company Service Payroll with Complete Flexibility for Reporting Regular Time, Overtime, Shift Premium, and Up to 8 Other Company Defined Payments. Extensive Tax Calculations.

PAY PERIODS — Weekly, Bi-Weekly, Semi-Monthly, Monthly

ACCUMULATION — By Quarter and Year-to-Date

OTHER FEATURES — Includes Multiple Checks and Automatic Deposits. Payroll and Labor Distribution from Same Input.

EXTENSIVE PERSONNEL INFORMATION — For Ready Retrieval

TOTAL PRICE — \$4500

INCLUDES —

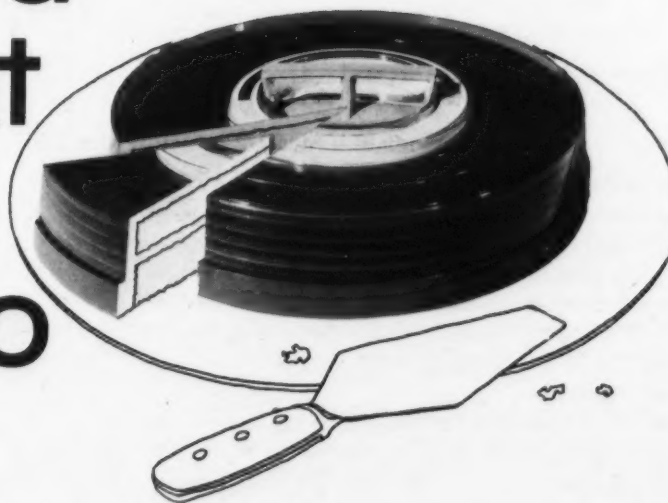
- Complete Systems and Programming Documentation
- On-Site Customer Orientation & Instruction
- 1 Full Week Installation Assistance if Required
- 90 Day Guarantee Against Program or System Errors
- One Year Systems Maintenance Optional — \$800

AVAILABLE — Delivery and Installation 60-90 Days from Contract



For Further Information Write or Call
GENERAL COMPUTER SERVICES, INC.
HUNTSVILLE INDUSTRIAL CENTER
P.O. Box 4163
Huntsville, Alabama 35802
(205) 539-9492

you can
have your cake
and
eat
it
too



...with CPU's all new disk pack lease plan!

Because of the fantastic sales success of our leasing plans, we are now able to provide a new and even better Disk Pack leasing program with greater savings and flexibility.

Here's how it works: CPU will lease to you either your present packs or new ones of your choice. Take advantage of our new five-year rate at savings of up to 40% of your present rates.

For additional information, write or phone us at 312 943-5636



Computer Packs Unlimited has Agents in the following cities: New York, Boston, Cleveland, Memphis, South Bend, Cincinnati, Minneapolis, Milwaukee, Los Angeles, Chicago, Miami.

Computer Packs Unlimited 232 East Ohio St., Chicago, Ill. 60611

And talk about flexibility! You may terminate the 5-year lease any time after 12 months by paying a small early termination fee. Or if you find that you need larger disk packs, you can terminate any time after the first year without penalty if you let CPU lease the 2316 disk packs of your choice.

In addition to greater savings CPU now offers 48-hour replacement of defective packs.

A growing family of inter-related companies serving business and industry.
Computer Processing Unlimited
Computer Packs Unlimited
CPU Inc., Miami Data Processing Center

Editorials

ACM and the Afips Contract

Two months ago we asked the officers of the ACM to explain why they unhesitatingly ratified the new Afips constitution without debating or explaining its financial implications at a time when, unknown to either the ACM Council or the membership, the society was essentially broke.

Since then this subject has been dealt with by the president of the ACM, by Richard Canning who represents the ACM at Afips, and by Walter Hoffman who, at the time, was treasurer of both the ACM and Afips. We have considered all these answers carefully.

Naturally they differ somewhat. Hoffman stated that Afips could distribute all its income to its member societies if it wished, but more realistically, Galler said that there most likely would now be a number of new Afips activities.

However, some things were similar in all the answers. One was a lack of any figures. How one can consider the financial implications of a question without using figures is not obvious.

Another thing that was common was a lack of any explanation for the apparent haste with which the ratification was put through.

And a third similarity was a lack of any consideration of whether the officials might themselves be involved in a conflict of interest because of their positions within both the ACM and Afips.

In the meantime, we discovered that Simulation Councils, Inc., one of the other two members of Afips which ratified the agreement, had borrowed \$15,000 from Afips, and we realized the generally unsatisfactory condition of the books of both ACM and Afips. Under the circumstances, we feel that there is a need for a full investigation. The present data must be considered unsatisfactory and *Computerworld* now calls for the ACM Council at its next meeting to see that a full explanation is provided to the membership — provided frankly and without undue delay.

Compatibility and Design

The action of the Department of Defense in supporting the use of plug-to-plug compatibility devices is to be welcomed. It is clearly absurd in this day and age to restrict users to any one manufacturer for all the devices connected to their computers, or to believe that the industry's engineering standards are so poor that it is not practical to interconnect devices supplied from more than one source.

It also is encouraging to note that the department does recognize that this means the end of the wet-nursing period is here. A vendor reasonably can be expected to take responsibility for only his own devices. Therefore total system responsibility must lie with the user in such cases.

However, it follows that a vendor should expect this and design his devices so that a user can take this new responsibility. This is probably the nub of the situation. If the available devices do not include, or include only at an extortionate price, the necessary means to allow a user to take this responsibility, then the freedom of the user is nullified just as effectively as if he were being forbidden to interconnect at all.



"Maybe I'm in the Wrong Business."

Research Report

Cobol Package Permits Use Of Shorthand, Pre-Auditing

Peter L. Briggs
CW Staff Writer

Called Magic, a new package for Cobol users has been developed to permit the use of shorthand notation, to enforce the use of standards, and to permit auditing of programs prior to compilation. The package is produced by Information Management Inc. of San Francisco.

Shorthand for Faster Coding

Using the feature of this pre-compiler called the Control Division, it is possible to use synonyms for any words in the Data Division. It also provides abbreviations for all reserved words in Cobol longer than four letters. One user of Magic told *Computerworld* that the time savings were great enough so that the installation had standardized on Magic. Every program written in Cobol has to be processed through Magic until a clean precompile-run occurs, he said.

It is possible to code only a few characters (see example) and from this to produce a fully formatted Cobol source program which has been edited for syntax errors and has expanded all coding into a standard form.

Standards Enforcement

In installations where the desire is to use only one "standard" Cobol, the user can specify any words which should be either flagged for warnings or completely prohibited. When a source program is run through Magic, these selected conditions are tested and the errors indicated. If the prohibit option is used, then a "\$" is placed next to the erroneous line.

Auditing Capabilities

Suppose an installation desires to prohibit certain options of Cobol, such as the VARYING

option. Upon request from a user, the developer will alter certain sections of Magic and attach them to the compiler directly, so that no program can be run through the compiler without passing through the audit routines of Magic. This would permit installations with several computers to keep careful control of any violations of these standards, but without human checking.

The package runs on any IBM/360 with 32K or greater, under either T/DOS or OS, and can be used through the cataloged procedure library under OS to simplify the operation. If a return-code were passed from Magic indicating that errors had occurred, the compilation step would be aborted, thus saving machine time and improving turnaround.

Solomon L. Pollock, company

vice-president, pointed out that many users might not need these auditing features immediately but that each user would, sooner or later, face the problem of conversion to another system or massive maintenance of a programming system. When this situation arises, he said, Magic can provide careful control of all phases, without effort on the part of management. Conversion can be greatly simplified, when there is a monitoring program to keep track of what is being done, Pollock said.

The package has a price of \$8,000, which includes the programs, manuals, and a year's maintenance. Possible alterations for attaching Magic to a compiler would be extra.

The company has offices in San Francisco at 447 Battery St. and in New York at 11 W. 42nd St.

Input to Magic:

```
PROC
S1 SECT
ENTRY 'TEST' USIN LINKDATA.
IF S-W GR 6 NEXT ELSE GO FLY-KITE.
```

Output from Magic:

```
001500 PROCEDURE DIVISION.
001510 S1 SECTION.
001520 ENTER LINKAGE.
001530 ENTRY 'TEST' USING LINKDATA.
001540 ENTER COBOL.
001550 IF S-W GREATER THAN 6
001560 NEXT SENTENCE
001570 ELSE
001580 GO TO FLY-KITE.
```

This example shows Magic's ability to expand predefined coding into an entire sequence of instructions in Cobol. The use of the ENTRY verb triggers the inclusion of the ENTER LINKAGE and ENTER COBOL statements.

The Generation Gap — Part 1

Have the Burroughs 500s Bridged The Programmer's Generation Gap?

The Burroughs 500 series is an unusual one. The first 500 was announced in 1961 as the B5000. This was later rechristened the B5500 when its memory speed was increased. The Burroughs 2500 and 3500 came out last year and the 6500 is due for its first delivery this year. It is an unusual time spread for any computer family, and therefore brings up the question: *Have the Burroughs 500s somehow managed to bridge the generation gap?*

The problem of the generation gap is familiar nowadays, particularly to programmers. Computer generations have often been described in hardware terms. The first generation has been characterized by vacuum

tubes, the second generation by transistors, and the third generation by integrated logic. These are valid concepts from the point of view of the engineer. From the point of view of the programmer, however, the problem has not been in the particular characteristics of specific generations, but in how to move from one generation to another.

Reprogramming Needs

The move from the first to the second generation was bad enough. The amount of reprogramming needed shocked many of the users in 1960. But the problems of moving from the second generation to the third generation shook the industry. Sometimes it took years to manage the transfer. Budgets were

hopelessly broken. Almost every month during the conversion period new and unsuspected problems occurred. So the problem of bridging the generation gap is one that is familiar to many CW readers.

B5500 Still News

The Burroughs 5500 system is also becoming more and more familiar to CW readers. This winter we carried a story from one user on the advantages he found in operating one of the systems. He pointed to the lack of job control cards, and to the ease of communication and debugging.

Shortly after this, a news item was printed which discussed the ability of the 360/67 to use more than one operating system

in its virtual memory, thereby allowing people from a terminal to determine under which of the many versions of the 360 operating systems they wanted to run their program. CW immediately received many letters from readers pointing out that this was nothing new. "Our B5500 has been doing it for months!" they said.

We found these letters very interesting because they represented an outpouring of loyalty from users of one of the oldest systems, a loyalty which in its intensity of feeling was unique in our experience.

These users had no fears of future incompatibility. They were obviously sold on the systems — and it is a fact that the B5500 is still in new production status, while many IBM 360s dropped out of that state last year!

How It Was Done

These two factors then led us to suspect that somehow, from the point of view of the programmers, the B500 had conquered the generation gap.

To see how this appears to have been done, we have to go back to the beginning of the systems.

The first of the 500s, the B5500, is an unusual system from the programmer's point of view. It is based on high-level languages, on Algol, Fortran, and Cobol to be precise, rather than on a machine language or assembly program. From the very beginning, Burroughs has made it clear that any user of machine language could not expect support when the operating systems changed. Few users did after their first experience. The Burroughs systems have always had an operating system; it was one of the design elements. The main one is called the Master Control Program or MCP for short. This master programming takes in the user's problem program written in high-level language and compiles it, stores it, and executes it as needed.

MCP's Role

The key point is that the MCP makes all the nitty-gritty decisions about how to store working areas, what sort of code should be produced, how tape labels are to be checked, etc., by itself. These are not the programmer's concern; he is interested only in the functions that the program performs and in whether he has asked for them correctly.

Characteristics Changeable

As a result of this characteristic, through the years Burroughs has been able to change totally the way programs are written at machine level without involving the original program writer. There have been three very major changes in the way programs are written.

At one time, for instance, it was decided that considerable efficiency could be gained if the programs were made "re-

entrant." This involves a technique of programming which insures that no modification is made to the program itself during its execution. As a result, it is not necessary to store a program on a disk if it is bumped during execution by a higher-priority program. Accordingly, Burroughs wrote a new version of the MCP and new versions of the compilers, which created re-entrant programs. Burroughs then distributed this new version to its users who just recompiled and again had their old programs running — but with a new technique that they could now take advantage of without any re-writing consideration.

Programmers Were Not Involved

This was possible because none of the user programmers was involved in worrying about the space now required to control the re-entrant characteristics, nor were there any machine-level language programs around with incompatible references.

Repeated Cases

And this wasn't the only case. Communications capabilities were added by the same method. What was happening was that user programs were being "jacked up" and a new operating system with updated characteristics was being slipped in underneath them. The latest change of this type was the addition of time-sharing capability, again without involving the user programs. The programs that had been written originally were still running, but now they could run in time-shared mode.

User Reaction

Naturally the users were delighted — as CW found when it talked to them. They found themselves being painlessly updated without having to reprogram and without having sudden incompatibilities appearing in files. They were not having to learn new job control languages and they were able to look forward to conversions with confidence. There is no doubt whatsoever that they believe that Burroughs has bridged the gap between the different generations of programs, and they see no reason why it should not now bridge the generation gap between different generations of systems.

Doubts Still Exist

However, there are still some doubts on the outside. Some users point out that nothing is won without cost and wonder whether or not the costs are worth it. In particular they wonder why, if the Burroughs system is so outstanding, the other manufacturers have not copied it in the many years that have gone by since 1961.

We will consider the cost next week and the reasons why perhaps some of the other manufacturers have not yet copied the B5500.

Letters to the Editor

Designer Denies Vote System Can Be Subverted 120 Ways

It was with great interest that we read your article concerning IBM and its discontinuance of vote tabulation activity [CW, March 19]. Several statements were made concerning the validity and/or accuracy of the Votomatic System generally, and the Los Angeles system in particular. Because we designed, created, and implemented the software used in both the city and county of Los Angeles, and because we are proud of the results of our work, we feel it incumbent upon us to take issue with some of the charges contained in said article.

Bear in mind, if you will, that we are considering only that part of the system concerned with the actual use of the computer.

There are three distinct areas where any data manipulation of a nefarious nature could be attempted:

1. Ballots entering the system.
2. Interim stage between programs.
3. During actual tabulation.

First, the ballot as it enters the system is most vulnerable to hanky-panky. But this is true of any type ballot and any would-be meddler would have to know exactly which column/row positions to punch in order to cause an actual change. Since a punch obviously cannot be removed, the result would probably be an invalidation of the particular race or issue, since any additional punches would most likely result in an over-vote situation. In addition, due to ballot rotation, any particular column/row punch will not always apply to the same specific ballot title, making successful card alteration very difficult. As the ballots are loaded to tape, they are precinct-checked and counted. This count is later matched against the precinct poll book, thus disclosing if more ballots were read in than there were people voting.

In the second stage, between programs, the ballots are stored on tape. These tapes are transported from their creation points to the central computer for processing by uniformed police officers. We maintain that it is manifestly impossible to alter a segment of magnetic tape at the byte level without rendering the entire tape useless; i.e., erasure, etc.

Which brings us to the third possibility, the actual tabulation of the ballot. This is accomplished by a rather large group of sub-programs called together the "Summary Information Program" (Sip). The main functions of this program are: to tabulate and store results by precinct, and to produce, on request, a variety of reports indicating the status of the election. With regards to tabulation, the ballots are read from tape, counted again, and then the actual votes are recorded in core. When an entire precinct has been entered, the results are stored on a prefor-

matted disk file. The file must be zero to start and no precinct may be entered twice which insures no tampering with the physical disks themselves. Each file is maintained in duplicate so that in event of power failure, drive failure while writing, etc., only the current entry need be recreated. Sip has restart capabilities for such contingencies and can recover from practically any disaster in 10 minutes.

In addition, there are various sequence checks, special check digit tests, etc., which are continually in use throughout the running of the program. For obvious reasons, we cannot detail them here, but we feel that they safeguard the voter's franchise beyond all other systems now in use and we are quite confident that while our system may not be infallible, there are substantially less than 120 ways to subvert it.

Lance W. Clifford
Peter H. Jaeger

Comtek, Inc.
Portland, Ore.

He Defends IBM's 2361 LCS As Faster Than CW Reported

The announcement of Lockheed's mass memory for 360s and 494s [CW, April 9] is a welcome step forward in large-memory technology. Your article, however, erroneously reported the access time of IBM's 2361 LCS unit as 8 microseconds per byte. In reality, LCS access time is model and option dependent. On the Model 50 the access time is 8 microseconds per 4 bytes (effective time of 2 microseconds per byte). On the Models 65 and 75 LCS access time is dependent on interleaving and is either 8 microseconds with access to 8 bytes (effective time of 1 byte per microsecond) or, with interleaving, 4 microseconds effective time with access to 8 bytes (1 byte per 500 nanoseconds). In no case, however, is the access time 1 byte per 8 microseconds as was reported.

Lance H. Vaughan

Boston

The phrase "per byte" was erroneously added during a rewrite. Sorry. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 250 words or less. Computerworld reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 60 Austin St., Newton, Mass. 02160.

Computer Acts As Laboratory In Secondary School System

HUNTINGTON, N.Y. — Can the computer in the secondary school function as a laboratory, enabling students to comprehend concepts presently beyond their grasp, or is it a programmed instructional device?

If early results of a two-year study underway in Suffolk County are an indication, the computer can be made to function as a laboratory.

This is the goal of the "Huntington Project," so called because most of the high schools involved are in the town of Huntington.

In the project schools, the computer, either a small PDP-8/I from Digital Equipment Corp. or a terminal to the large time-sharing system operated by Pillsbury Occidental's Call-A-Computer, has been made to serve as a modeling device in the study of biology, chemistry, physics, mathematics, and social studies. Since January, teachers have devised more than 80 programs for student use.

Typical of the teachers using

the computer to simulate experiments previously impossible is Mrs. Mae Cort of Walt Whitman High. The school's PDP-8/I has been equipped with a switch, giving Mrs. Cort and her biology class complete control of the computer for a variety of experiments.

A secondary purpose of the National Science Foundation-funded "Huntington Project" is to determine whether it is better to have a computer on hand, or if time-sharing can be made to suffice, according to Prof. Ludwig Braun of the Polytechnic Institute of Brooklyn at Farmingdale, N.Y., the project's director.

While no final evaluation of this question has been made, one thing is apparent to most of the 45 teachers and 1,200 students taking part: More input devices are needed. Both the PDP-8/I and the time-sharing terminals have created so much interest that there is not enough time to satisfy teacher and student demands.

Of the two approaches, however, the small computer appears to have some very definite advantages. For example, Mrs. Cort found it difficult to gain access to the large system on occasion.

The PDP-8/I, with 4,096 words of basic core memory and 32,768 words of disk storage, cost \$19,300, less than the price of a time-sharing terminal for two years.

While it does not possess the large variety of programs nor the ability to act as a file of student and teacher programs for all schools in the project, the advantage of the small computer is that the purchase price is a capital expenditure. There is no yearly rental involved.

Warren Houth, in charge of the PDP-8/I at Walt Whitman, also pointed out that the Focal conversational computer language available only with the PDP-8/I has decided advantages for those with no programming experience.

Library Systems Studied By ITT Research Institute

CHICAGO — The feasibility of developing cooperative procedures for sharing resources between six regional library systems in northern Illinois is being studied by ITT Research Institute here. Over 200 individual libraries comprise the six systems supporting the study.

The institute will study current operating procedures of the participating libraries and will investigate possibilities for intro-

ducing automatic data handling techniques. The study is expected to lead to recommendations for cooperative procedures permitting the systems to obtain and exchange information rapidly about their book collections and other educational resources.

Standardized cataloging rules and magnetic tapes offered by the Library of Congress in its Marc II (Machine readable cataloging) project will be reviewed as a basis for organizing standard cataloging procedures for participating libraries. The bibliographic data system designed during the first phase of the project can provide a basis for automated acquisition and circulation operations which could be used in the future by member libraries.

New Literature

A series of specialized reports designed to reflect the results of the research and development efforts of the National Computing Centre of Manchester, England, has been initiated.

Titles published to date include: *Computer Courses 68/69*; *Computer Application Packages*; *Computer Aided Production Control*; *Commodity Coding*; *Computers in Distribution*; *Computers in Textiles*; and *International Computer Bibliography*.

Reports are available by subscription only. Contact Nancy Bauer, Science Associates, 23 E. 26th St., New York 10010.

A new brochure, *Job Documentation by Colt/360* describes the job documentation that users will receive with the control language translator for JCL upon its implementation in IBM 360 operating systems.

AIM, 16033 Ventura Blvd., Encino, Calif. 91316.

Four new information bulletins describe computer graphics as a management tool, SCOPLOT, 3-D applications software, and the GPCP contouring program.

California Computer Products, Inc., 305 N. Muller St., Anaheim, Calif. 92803.

A new bulletin describes the performance specifications of the Ampex 25DM-500 magnetic

core memory. Request brochure C-099 from Lee Westfall, Mail Stop 7-14, 401 Broadway, Redwood City, Calif. 94063.

A new brochure describes a new business concept of total systems responsibility with turn-key contracts.

A detailed, functional flow diagram shows entwining involvement of project management, total system responsibility, and consulting services.

Digital Applications, Marketing Services Dept., 866 Third Ave., New York 10022.

A complete description of Coded-Cap, a conversational circuit-analysis program, may be obtained at no cost from Product Information Dept., ComShare, Inc., 1919 W. Stadium Blvd., Ann Arbor, Mich. 48106.

Computer Literature Bibliography, Vol. 2 is a continuation of *Computer Literature Bibliography, 1946 to 1963* and contains approximately 5200 references to computer literature published during the years 1964-1967. The bibliography section includes the full title and the names of all the authors of each item. Price is \$5.

Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

School Offers Tuition Refund Plan

FAIRFAX, Va. — The National Bank of Fairfax, and Computer Age Institute, Fairfax, have developed a tuition loan plan with a liberal refund provision for students accepted by the institute.

This provision permits a student to receive a refund of his tuition commitment amounting to as much as 100%, according to a spokesman at Computer Age Institute.

If the student withdraws before the first day of the course, he receives 100% of the tuition,

including the \$175.00 initial payment and registration fee.

If he withdraws before having completed 100 hours of time, he receives 75%; before 150 hours, 50%; or before 200 hours, 25%.

The student may pay the balance of his tuition over a period of 36 months, and since the courses offered are completed in less than a year, he is able to pay the bulk of his tuition after being on the job for which he trained.

Computer Age Institute is a subsidiary of Computer Age Industries, Inc.

Turn the
Peopware
problem into
an opportunity
...with a

COMPUTER ENVIRONMENTS CENTER Franchise

A CEC Franchise is unique. It's an "open-ended" agreement that makes it possible to market other needed computer-related services in addition to computer career training. Better yet, the franchise offer comes from a firm with a thoroughly proven record of success and an unimpeachable reputation for professionalism and know-how...not only in computer education but in all areas of electronic data processing (time-sharing services, software, applications, management seminars, others). Best of all, CEC provides continuing assistance in successful school-operating methods...and the industry's best most dynamic curriculum. Write today for details on how you can turn the computer education problem into an opportunity.

Frederick B. Bartlett
Director of Franchising



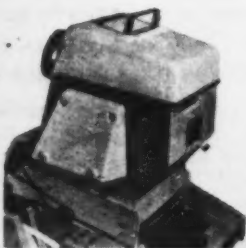
COMPUTER ENVIRONMENTS CORPORATION
Hanover, N.H. 03755
Tel. (603) 643-4655

TIME SHARE company

PROJECT TELETYPE PRINTOUTS

New TyProjector®
Opaque Projector
Mounts on Model
33 Teletype®
for Group Viewing
of Typed Material

- Simple to use; No Teletype modifications
- For groups of up to 100 viewers
- Projects line being typed, and 19 preceding lines



BOLT BERANEK & NEWMAN INC.
DATA EQUIPMENT DIVISION
2126 South Lyon Street
Santa Ana, California 92705
Telephone: 714/546-5300

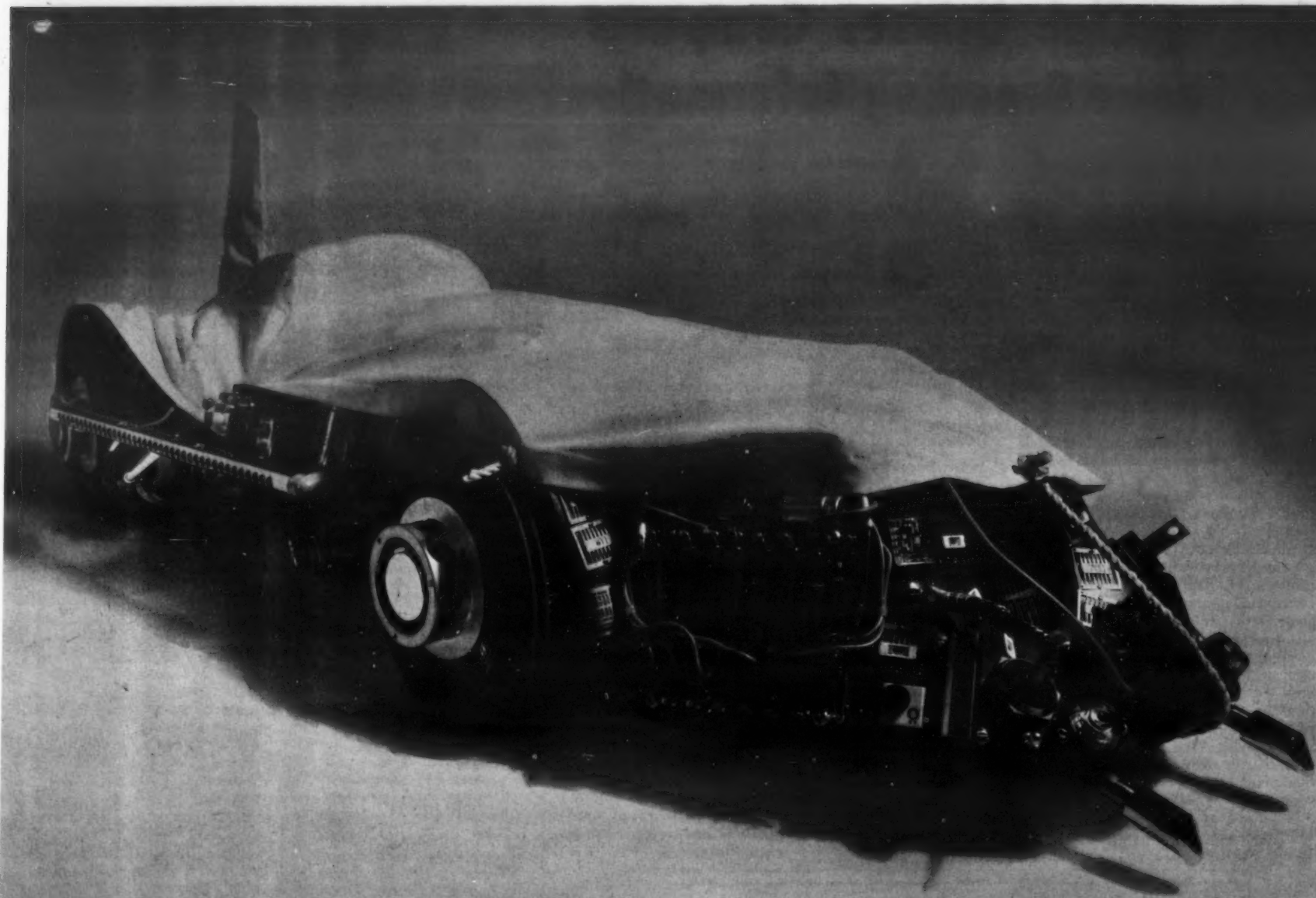
Computer Companion #786



Tab's Data Media Control System helps you make maximum use of your computers. How? By making sure all your Data Media — cards, tapes, disks, etc. — are stored and transported with the greatest efficiency. This system starts with our Data Media Control Survey which gives

you a clear picture of your current data media inventory and handling capacity, and of your present and future requirements. We'll be glad to send you a copy, (and be glad to help you make your survey, without obligation). Write us.

TAB
PRODUCTS CO.
633 Battery Street,
San Francisco, Calif. 94111



Introducing the super-dynamic Honeywell Model 3200.

We're taking the wraps off our low-priced entry in the medium-range computer field of the seventies. Right now.

The reason is that the need for integrated management information systems has zoomed past the capabilities of the equipment in the field.

So the 3200 is leaving the computers of the sixties in its dust. With the kind of

performance that can drive out your MIS problems right now. And for years to come. Super memory capacity. A fast-moving computer that can deliver information from all over your company. Instantly. And it's compatible with the rest of our Series 200 computers.

The 3200 operates with the pace-setting new Mod 4 operating system, which handles

20 independent programs concurrently.

Someday, others may introduce computers with price and performance like this one. But you can have it now.

A medium-range computer. With a compact price.

The jet-smooth, super-dynamic, luxuriously powerful, unmistakably sensational Model 3200 computer.

The Other Computer Company:
Honeywell

Jockey Club Utilizes Computer For Choice Breeding Information

By Joseph Hanlon

LEXINGTON, Ky. — A computer research program on bloodlines and breeding records could benefit the entire thoroughbred racing industry, according to the Jockey Club.

The club, the organization responsible for the registration of thoroughbred race horses in this country, is using an IBM 360/30 to register and compile records on all horses foaled in the United States and Canada since 1927.

The purpose is to make reports expected to produce more selective breeding results, establish better measures of the actual genetic traits affecting racing ability, provide decision analysis tools for the entire industry, and predict the relative success of untried horses.

An offshoot of the correlation of this data is producing, for the first time, a complete analysis of race horse breeding, performance, and earnings, according to Ray Gillespie, manager of data processing for the club.

"Our major commitment at this point," he said, "is to work closely with club officials in speeding the registration of thoroughbreds. However, as a long term project, we are working on a system for rating horses based on their genetic makeup and racing performance."



Racing's most successful sire, Bold Ruler, is shown here with Arthur Hancock of Claiborne Farms. Having sired some 50 stakes winners, his breeding record is of immense interest

The genetic analysis will be applied to untried horses. The performance of his parents and brothers will be analyzed to predict, fairly closely, Gillespie feels, what each horse can or cannot do. The club hopes that this will aid racetracks everywhere in setting up races in which the horses have comparable abilities.

In explaining the need for a computer to process the information, Gillespie pointed out that, whereas only 13,257 horses raced in 1940, now some 40,661 horses race. Information about each horse is collected as soon as the horse starts racing and is updated with earnings and records for each race.



A scintiscanner is adjusted over a patient in preparation for making a scan of radioactive isotopes in his thyroid gland.

Computer Techniques Aid In Detection of Cancer

NEW HYDE PARK, N.Y. — Anatomical hide-and-seek is becoming passé as doctors apply the techniques of nuclear medicine and computers to the difficult problem of detecting cancerous growths in the human body.

Doctors at Long Island Jewish Hospital here have teamed a Honeywell computer with a scintiscanner to find thyroid and brain tumors in patients and to pinpoint the locations and size of the growth.

Until recently the physician relied almost exclusively upon his clinical examination and the x-ray machine to find and locate tumors. X-ray technicians photographed the patient as instructed by a radiologist who later

searched the x-ray looking for tell-tale changes in the light and dark areas that might be tumors.

Although still extremely useful, this technique does not pick up all tumors. The difference in shading in the x-ray picture may not be sufficient for diagnosis even when enhanced by injection of special contrast materials.

Still under evaluation, a more recent approach uses computers to examine the x-ray since the machines can detect as many as 100 shades of gray. The technique was derived from the military application which uses computers to examine aerial photographs of enemy terrain for troop and equipment concentrations.

360/50
Time for Sale
to 30/40/50/65 users at
Comparable rates
MIDTOWN, N.Y.C.

Whether you are currently buying computer time or expect to buy in the future, EPG would like to talk to you. Through the use of multi-programming EPG can now offer to 360 users its full model 50 with operator "round the clock". For further information call John Francis or Ted Sabarese at

E.P.G. COMPUTER CENTERS CORP.

(212) 889-1620

A SUBSIDIARY OF

E.P.G. COMPUTER SERVICES, INC.

Penn Central to Install Quick Reservation System

PHILADELPHIA — Penn Central will install an advanced, computerized system to expedite passenger ticketing and reservations on its new Metroliner high-speed trains operating between New York and Washington. It is planned to have the new service operational by mid-summer.

Under the new system, a single reservation and ticketing procedure will be completed in approximately 20 seconds. The selection of a seat will remove it from the inventory.

The equipment was developed by Ticket Reservation Systems, Inc., of New York City. Eventually, Penn Central will expand this ticketing and

reservation system to all trains serving the Washington-New York corridor.

Installation of console-printer units at station ticket windows in New York, Newark, Trenton, Philadelphia, Wilmington, Baltimore, and Washington will proceed as rapidly as the equipment can be obtained and tied in with master computers, a spokesman said.

"All the ticket clerk will have to do is press several buttons on the console," said Robert G. Flannery, vice-president for operations. "If the space on the train desired is available, the machine will immediately print a ticket showing the Metroclub seat number, car designation, train identification, fare, and date. If the ticket is for a coach passenger, the ticket will have an identifying color stripe which replaces the present boarding pass needed to admit passengers to the train."

"At the same time, a Teletype beside the console will record the transaction on paper," he continued. "The equipment also will do the clerk's bookkeeping, showing him at the end of his tour of duty how much money he should have in his cash drawer."

Consulting • Leasing • Software



EDP RESOURCES INC.

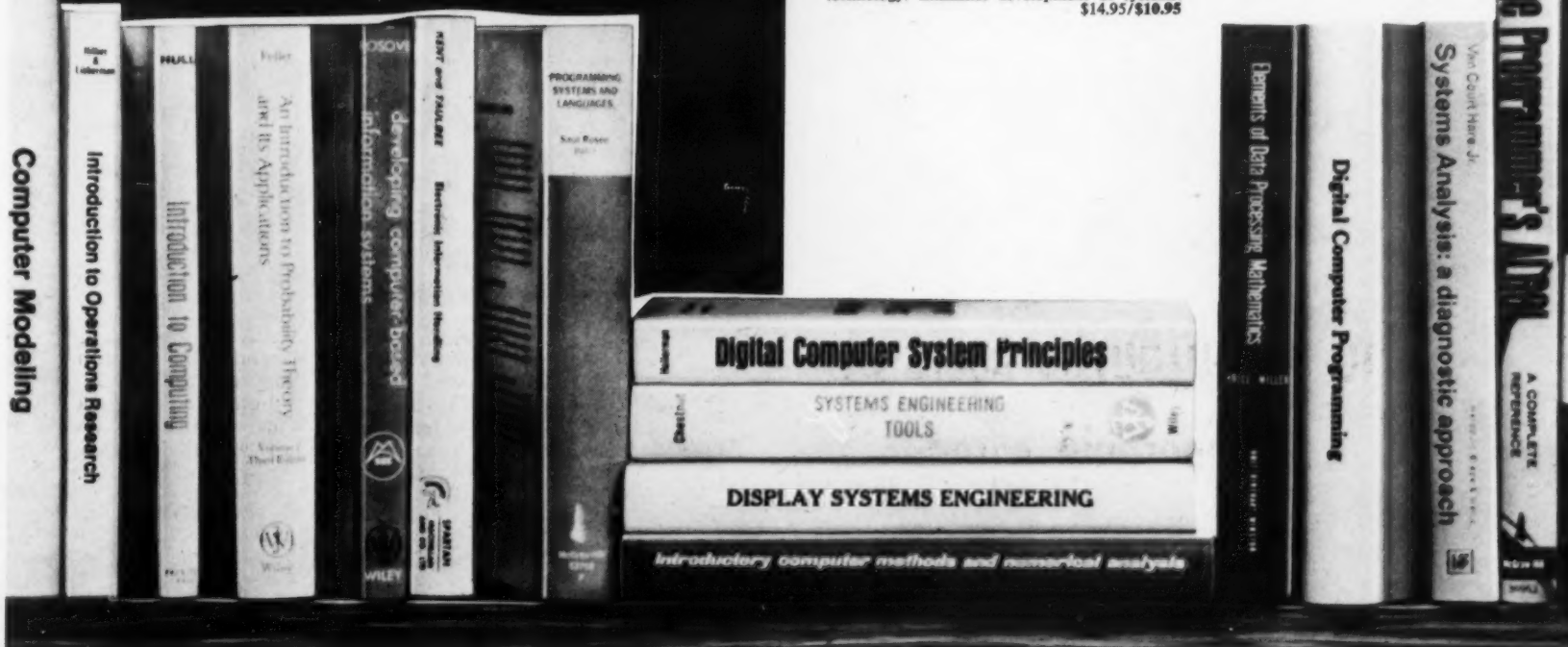
White Plains Plaza
One North Broadway
White Plains, N.Y. 10601
914 428-3804

How to keep up-to-date in the swiftly changing computer world

In computer science, the fastest growing technology of our time, last year's knowledge can seem fifty years' out of date. But the excitement and rewards of keeping up are great.

The question is, how? Thousands of executives, EDP managers, programmers and technicians have discovered the answer in The Library of Computer and Information Sciences.

Each month, this highly specialized and valuable book club screens hundreds of books, chooses only the most significant—essential reference books, important books on managerial techniques, programming, software, hardware, theory. Each represents the best and most advanced thinking in its subject. All are offered to you at discounts of up to 40% (sometimes more). For each four books you buy, you are entitled to your choice of a free bonus book. There is no better time-and-money saving way to get the books you must have to keep current—and to keep ahead in your field. With this special introductory offer, you have everything to gain by acting now.



SPECIAL INTRODUCTORY OFFER:

Take any 3 (values to \$46.40) all for only \$1.00

with your first selection as a trial member of
**The Library of Computer
and Information Sciences**

Retail prices light face; members' prices bold face.

70720. THE PROGRAMMER'S ALGOL. Charles Philip Lecht. Complete guide to ALGOL. Bridges gap between too-theoretical presentations and the needs of the practicing programmer. **\$8.95/\$6.95**

56140. INTRODUCTION TO OPERATIONS RESEARCH. Frederick S. Hillier and Gerald J. Lieberman. Comprehensive survey of the basic technology and techniques of operations research, with emphasis on motivation and simplicity of explanation. **\$14.75/\$10.50**

81870. SYSTEMS ANALYSIS: A DIAGNOSTIC APPROACH. Van Court Hare, Jr. A major work on a new discipline. Contains progressively more difficult examples and problems. Ideal for self-instruction. **\$12.50/\$9.25**

42190. DIGITAL COMPUTER PROGRAMMING. Peter A. Stark. Uniquely practical introduction to the programmer's art, with step-by-step solutions to hundreds of typical computer problems. Covers computer characteristics, applications, techniques, and languages. **\$9.95/\$7.50**

82100. SYSTEMS ENGINEERING TOOLS. Harold Chestnut. Drawing on practical situations, the author explains nature of systems engineering problems and the tools used in solving them. Over 300 diagrams. **\$14.95/\$10.50**

70350. AN INTRODUCTION TO PROBABILITY THEORY AND ITS APPLICATIONS — VOL. I. William Feller. A self-contained introductory course in probability theory. **\$10.95/\$7.95**

39990. COMPUTER MODELING AND SIMULATION. Francis F. Martin. Lucid introduction to this powerful new technique. Discusses the practical and potential applications, the advantages, who should use it, and the criteria to apply. Clear and beautifully reasoned. **\$12.95/\$9.50**

56300. INTRODUCTION TO COMPUTING. T. E. Hull. Highly useful new guide to algorithms, stored-program computers and programming techniques. Focuses on FORTRAN IV. **\$10.60/\$7.75**

42060. DEVELOPING COMPUTER-BASED INFORMATION SYSTEMS. Perry E. Rosove. Comprehensive study of the new information technology. Examines development of systems. **\$14.95/\$10.95**

42170. DIGITAL COMPUTER SYSTEM PRINCIPLES. Herbert Hellerman. A unified and authoritative overview of digital computer systems, many of which are common to programming, machine design, and problem description. **\$13.50/\$9.75**

42370. DISPLAY SYSTEMS ENGINEERING. Edited by H. R. Luxenberg and R. L. Kuehn. Thorough exploration of the devices and systems of recording and displaying computer based information. Develops theoretical foundations and discusses their technological applications. Many illustrations and diagrams. **\$16.50/\$11.95**

70790. PROGRAMMING SYSTEMS AND LANGUAGES. Edited by Saul Rosen. Outstanding review of computer software. Brings together the most authoritative articles on history of programming systems. **\$12.50/\$8.95**

56490. INTRODUCTION TO COMPUTATIONAL LINGUISTICS. David G. Hays. An ideal volume for self-tuition. Book covers three levels—computational, linguistic and the level of the myriad of applications now or soon-to-be available. **\$9.75/\$7.50**

41660. ELEMENTS OF DATA PROCESSING MATHEMATICS. Wilson T. Price and Merlin Miller. Enables readers with minimal math background to become proficient in math needed for understanding automatic data processing and computer programming. **\$10.50/\$7.75**

44100. ELECTRONIC INFORMATION HANDLING. Edited by Allen Kent and Orrin E. Taulbee. Comprehensive overview of total information handling and retrieval. Includes interpreting signals and numerical information. **\$11.00/\$7.95**

56410. INTRODUCTORY COMPUTER METHODS AND NUMERICAL ANALYSIS. Ralph H. Pennington. Covers most commonly used methods of modern analysis, stressing those of proven value in computer solution of science and engineering problems. **\$9.25/\$6.95**

TRIAL MEMBERSHIP APPLICATION

7-943

The Library of Computer and Information Sciences
Front and Brown Streets, Riverside, N. J. 08075

Please enroll me as a trial member, and send the four books whose numbers I've indicated on this coupon. Bill me only \$1.00 for the first three, low member's price for the fourth, plus a small shipping charge. If I am not delighted, I will return the books within 10 days, and my membership will be cancelled. As a trial member, I need accept as few as 3 more selections during the next 12 months, always at reduced member's prices, plus shipping. I understand that savings range up to 40%, and occasionally even more. Each month I will receive advance reviews describing forthcoming selections, along with a convenient form for requesting alternate selections or no book at all. For every 4 selections purchased, I may choose a free bonus book.

Three Books—all for only \$1.00 plus first selection at low member's price

(write in numbers)

(1st selection)

NAME

ADDRESS

CITY STATE ZIP CODE

Offer good in Continental U.S. and Canada only. Prices slightly higher in Canada.

This is a remote job This is an on-line c This is a commun This is a remote di



Perhaps you wonder why we advertised System 21 as a replacement for key punch/verifier and key/tape operations?

Cutting data input costs in half was only the start of our story. Add a communications adapter to a System 21 station and you will have a remote job entry terminal, an on-line computer terminal, a remote display and a communication station that will send and receive messages like a teletype.

System 21 will give you complete desk-top communication capabilities. A standard keyboard. Two data recorders. A video display. Preprogrammed micro-

processor for off-line verification, electronic editing and fill-in-the-blanks formatting. Automatic turnaround. Automatic batch transmission and receipt.

You can even add an inexpensive printing robot that lets you make hard copies on your Selectric® typewriter.

No capital expenditures are required. No long-term leases. The VIATRON rental agreement will contain a 30-day cancellation clause.

Deliveries are scheduled to start this year.

For more information write VIATRON Computer Systems Corporation, Dept. C-9, Route 62, Bedford, Massachusetts 01730.

Don't miss our latest new product to be presented at the SJCC-Booth H-1

VIATRON

SYSTEM 21

Job entry terminal computer terminal communication station display



new product
presented at
H-10 thru H-13.

VIATRON

SYSTEM 21

VIATRON System 21 puts the logic where the problem is



On the Beam

This experimental light deflector switches a laser beam from one spot to another in 35 millionths of a second. Designed and assembled at the IBM Systems Development Division laboratory in San Jose, Calif., the deflector operates at speeds required in future optical memories.

Thermal Page Printer Serves As Input/Output Terminal

UPPER SADDLE RIVER, N.J. — A thermal page printer designed for use as an input/output terminal has been announced by Computer Transceiver Systems, Inc.

Designated the Execuport 300, the unit has a 96-character set, including full ASCII, upper/lower case alphabet, and special characters, a company spokesman said.

The unit operates from any location where an ordinary electrical outlet and telephone are available.

In operation, the user will dial-up a remote computer, put the headset in a coupler cradle, and type input from the keyboard. Both input and output



Execuport 300 terminal printer

spokesman said.

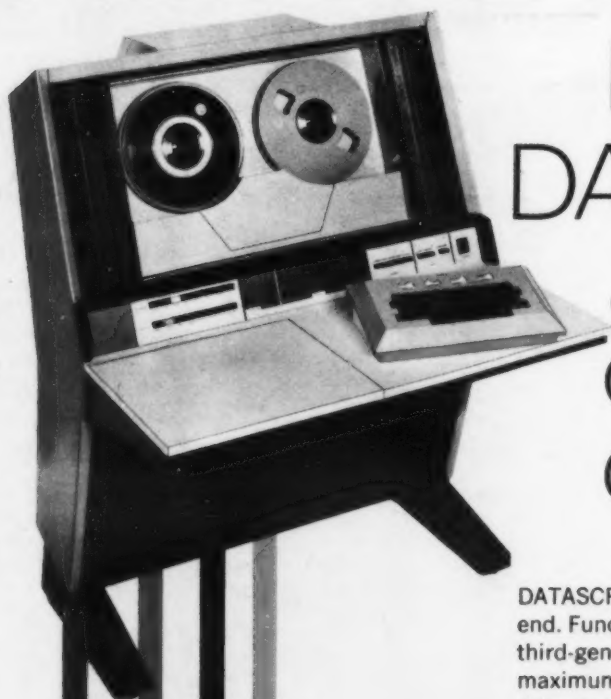
Execuport is priced at \$3,800 for a single unit, with quantity discounts available, he said.

Production deliveries are to begin in the third quarter.

The company has offices at 123 Pleasant Ave. here.

are printed.

The unit has output rates of 10, 15, or 30 characters per second, operator-selectable, the



Introducing DATASCRIBE™ ...the vanguard of all data recorders

DATASCRIBE data recorders begin where other data recorders end. Functional and fashionable, DATASCRIBE combines third-generation IC electronics with tomorrow's styling for maximum operator convenience and efficiency. No other data recorder gives you all these advanced features:

Illuminated display panel for simple, easy-to-understand presentation of data.

Proprietary magnetic tape transport provides 32 ips inscription, verification and search; automatic tape positioning; tape mark recording and sensing.

"Feather-touch" keyboard provides 64 characters including 17 special keys of either ASCII, EBCDIC or BCD codes; interlocks to reduce error probability; automatic audio/visual annunciation to report errors and aid keying rhythm.

Roll-away doors for quiet, non-distracting dust-free operation.

To find out how DATASCRIBE can put you in the forefront of data recording techniques, write or call us today!



vanguard
DATA SYSTEMS

3835 Birch Street
Newport Beach, Calif. 92660
Phone: (714) 540-7640

Used Computer Market Gains Sophistication

NEW YORK — The business of leasing and selling used computer systems is becoming more sophisticated, with companies offering added services to the users.

Typical of this change is IOA Data Corp. which now offers its customers the consulting services of Worldwide Computer Services Inc.

"We are now able to provide our customers with a complete package of hardware and related software," said Stuart Rubenstein, chairman of IOA Data Corp.

It used to be that a user knew exactly what equipment he wanted, an IOA spokesman said. But now, with the complexities of modern systems, the user often needs help in deciding how to update or revise his installation, and that's where Worldwide comes in, he said.

IOA, with offices at 383 Lafayette St. here, owns 20% of Worldwide, which is the basis for the working relationship, the spokesman said.

Japan Schedules Business Show

TOKYO — Japan's 38th Business Show will open May 23 with an array of computers, business machines, and office products from approximately 200 manufacturers, both Japanese and foreign.

The show, to be held at Tokyo's Harumi Pier exhibition grounds through May 28, is expected to draw close to half a million visitors from all over the world.

According to the Ministry of International Trade and Industry (MITI), Japan's computer production totaled \$455 million last year, up 40% over 1967.

The show is held twice a year, the site alternating between Tokyo in the spring and Osaka in the fall. It is organized by the Nippon Office Management Association and the Tokyo Chamber of Commerce and Industry.

Real Estate Service Offered

DALLAS — A computerized real estate marketing system which can put realtors, other brokers, investors, lenders, exchanges, buyers, and sellers into immediate contact on a nationwide basis is now available through Associometrics, Inc.

AI is using its Dallas data processing center, one of four such centers in northern Texas, where an IBM 360 computer is controlling a telecommunications system.

This system includes Touch-Tone telephones, audio response, Teletypes, and visual displays which come with an optional printer. Any member utilizing the system, the company said, will have access to what will become the largest inventory of real estate listings anywhere in the world.

The system is such that it can handle residential, commercial, industrial, and agricultural property listings. This Realtor Inquiry package was developed by AI's teleprocessing staff for one of its major clients.

System Helps Students To Probe Job Interests

LAS VEGAS, Nev. — The Interactive Occupational Exploration System, a personnel guidance system, was introduced at the American Personnel and Guidance Association convention in Las Vegas. The new system is intended to aid students in exploring various occupational possibilities and will supplement Interactive Learning System's existing Guidance Assistance Programs.

The system is designed for use by the student in the high school guidance office. Application of the system may also be made on the junior high school and junior college levels. Access to the computer data file is by means of a standard teletypewriter located in the guidance office.

The data file contains information about thousands of occupations coded from the U.S. Labor Department's *Dictionary of Occupational Titles*, an Interactive spokesman said. The student inputs characteristics which are important to him in choosing a job, and the computer responds with a list of occupations having these particular characteristics. Each job is described by 15 categories such as work activities, physical demands, working conditions, earnings, education required, and advancement, he said.

Simul8s Price Cut to \$1,500 By Developer

SAN DIEGO, Calif. — Users who are currently interested in, or considering purchasing Simul8s (an assembler for, and simulator of the PDP-8 series computers) can now obtain the package at a reduced price.

The new price for the package plus documentation and support is \$1,500. On-site training from the developer, Decision Science, Inc., is available for \$450 plus air fare.

The package operates on the 360/40 or larger and the CDC 3600.

The company has offices at 4508 Mission Bay Drive here.

The system is believed to be the first in the country utilizing an on-line computer to retrieve data about occupational descriptions, he said.

Interactive has offices at 16 Soldier's Field Rd., Boston.

Program Edits List Tapes in One Pass

LANHAM, Md. — A program which dissects identified fixed-field name and address computer tape files and isolates items within each field has been introduced by Softpak Inc.

The new program eliminates the need for multiple computer passes in editing tape lists and is particularly useful in tape-to-tape list preparation for producing personalized computer letters, rosters, and photo-composition directories, a Softpak spokesman said.

In the name field, name prefixes, first or middle name, and name suffixes can be extracted, he said. These items can be converted to upper and lower case; abbreviations can be punctuated properly; or the full word can be inserted via a table look-up process (i.e., the abbreviation Dr. can be spelled out Doctor). Last names with double capital letters such as MCARTHUR can be converted to McArthur and O'DONNELL to O'Donnel, he said.

In the street and city/state/zip fields, abbreviations such as Ave. or PA can also be spelled out in full. At present MAC, O', D', and A' names are translated with the parameter look-up table, he said.

The program can be purchased individually for \$950 or as part of Softpak's complete file maintenance and computer letter system (CAMS) for \$600. The program, either the edit package or CAMS itself, runs under DOS/TOS on S/360 with 32K.

IBM Preparing a Better Version Of PL/I F-Level OS/360 Compiler

WHITE PLAINS, N.Y. — Major improvements to IBM's PL/I F-level compiler for OS/360 have been announced.

Version 5 of PL/I (F), scheduled to be available in the first quarter of next year, will include the following improvements:

- Faster execution speeds for scientific programs through more efficient generated code and the use of optional loop and subscript optimization phases.
- Language extensions and

other new options which make available to the PL/I user many of the message-processing facilities of OS/360 Queued Telecommunications Access Method (QTAM).

- Expanded data handling functions facilitating data conversion, validation, and input editing.

- Reductions in storage requirements for two-byte binary data through the use of the half-word binary capabilities of System/360.

Typesetting Language Is Developed

CW Staff Writer

NEW YORK — A new computer language called Page-I that the company expects will have the same effect upon the use of computers in the graphic arts industry as high-order languages such as Fortran and Cobol had on science and business, is available now from RCA's Graphic Systems Division.

Page-I allows graphic-arts per-

sonnel unskilled in computer programming, and programmers with a rudimentary knowledge of typesetting, to tell a computer exactly how to handle all aspects of composition, the company stated. A simple system of code words marked on the original manuscript defines format, type faces and sizes, justification, hyphenation, pagination, footnotes, and captions.

Bank's Installment Loan System Now Available to Other Users

BOSTON — A new installment loan system, developed by and for the First National Bank of Boston, is being offered and maintained through the Cullinane Corp. here.

The package, which operates on a 360/30 with 65K memory and at least four tapes or disks, is written in Cobol and has been in successful use at the bank for some time, a Cullinane spokesman said.

The system features, for the loan officer, up-to-date payoff amounts for each loan, up to 99 different loan-type classifications, indirect loan reporting, management statistics, and automatic closure of small balances, he said.

To facilitate correspondent banking, the package includes several accrual methods, check-digit calculation routines, option codes for report selection, and complete freedom of selection for the cycle period of late and delinquent notices and late charge assessments, he said.

Input to the system can be in

the form of either cards or paper tape, using batch-control tickets to provide input balancing. The primary report from the system is called the Consumer Credit Reference Listing, which contains current balances, payoff amounts, and other pertinent information regarding each account, the spokesman said. A

daily activity listing is produced, and the consumer report is produced weekly. Other reports are available with the package as needed.

Price of the package is \$15,000, which includes manuals, operating instructions, installation manuals, and training guides.

Utility Company Package Handles Billing, Accounting

ORLANDO, Fla. — A new billing and accounting service package is being developed by Florida Computer Systems Co. to provide a complete package for billing, meter processing, delinquent accounts handling, and the other functions related to the operations of utility companies.

Called Fubs (Florida utility billing system), the system is designed to serve the needs of over 300 utilities in the state as

well as those of Florida Gas Co.

"We've incorporated the best techniques learned at Florida Gas Co. with those from leading utilities all over the nation," says Ed Skinner, FCS general manager, "to develop the nation's first modern computer system that will effectively cross all utility industry lines."

System Functions

Functions of the system include delinquent notices sent automatically to late-paying customers, and automatic credit rating procedure that evaluates customers based upon their payment history (which reportedly could drastically slash bad-debt write-offs), and management reports which show up to 14 months' history for each utility customer, he said. The system also automatically performs regular meter reading processing, regular billing with automatic posting of cash payments, delinquency analysis, merchandise and lease accounting, gross and net billing, automatic accounting journal entries, and even bill analysis reports for rate-study purposes.

Please use This Form For Your Change of Address

Please attach your current mailing label and supply the new information requested below.

Allow 25 days for change of address to take effect.

Send this information to: Circulation Manager, CW, 60 Austin Street, Newton, Mass. 02160.

ATTACH COMPUTERWORLD MAILING LABEL	
Card 1	Title New: <input type="text"/> 49 <input type="text"/> 56
Name <input type="text"/> 31 <input type="text"/> 48	
Company Name <input type="text"/> 57 <input type="text"/> 79	
Card 2	New Address <input type="text"/> 15 <input type="text"/> 37
City <input type="text"/> 38 <input type="text"/> 51	S.A. <input type="text"/> 52 53 S.C. <input type="text"/> 54 55 or office use only
New Zip Code <input type="text"/> 56 <input type="text"/> 60	

SOFTWARE FOR SALE

Are your information management programs tying your computer up, and your programmers down? Untie both with...

GIM*

GENERALIZED INFORMATION MANAGEMENT SYSTEM

GIM enables you to:

Significantly cut programming time to get an information management system on the air.

Deal with one integrated program rather than a series of many interdependent programs.

Establish data bases consisting of highly interrelated but different files.

Query your data base in English.

GIM is machine independent. It can be used on any computer that meets small core and random access storage requirements. Your data management personnel can learn to use GIM effectively themselves within two weeks, without knowledge of programming or computers.

GIM is available now! Inquire today about our leasing plans. Write Roger Wise, TRW Systems Group, One Space Park, Redondo Beach, Calif. 90278.

TRW

*GIM © Copyright TRW INC.

PATCH

ASSEMBLER LANGUAGE PROGRAMS

360 DOS Users - Investigate QQQPATCH - an aid in patching Assembler Language Programs

Replace Instructions

Add Instructions

No Re-Assembly

No Re-Link-Edit

Use Pneumonic Op Codes

(MVC Not D2)

No Conversion to Base and Displacement Addressing

Save Computer Time

Save Programmer Time

Lease: \$380 First Year

\$ 35 Each Renewal Year

For Information Write to:

IX SOFTWARE, INC.

2305 Tampa Bay Blvd. - 202
Tampa, Fla. 33607

360/20 - UNIVAC 9200 & 9300 GENERAL ACCOUNTING LEDGER SYSTEM

designed for 8K card system with Reader Punch and printer; Produces Journal Voucher Balancing, Trial Balance, General Ledger, Budget vs. Actual Comparison Reports and Financial Statements. Fully operational for 1 year. Send for full details. Price: Upon request.

Contact: Ron Ascherman
P.O. Box 1958
Santa Ana, Calif. 92705

"FIRST"

Financial Information Reporting SysTem

COBOL General Ledger

G/L & statement preparation system - does not dictate chart of accounts, account numbers or statement formatting. It is a parameterized system producing journals, trial balances, G/L posting, balance sheet, P&L, budget & prior year comparison.

Running on H200, 360/30, B2500.

\$20,000 purchase; franchise \$5,500, plus 6% of gross sales.

Contact: Woody Stem
Computer Resources Corporation
P.O. Box 431, Wilton, Conn. 06897
Phone: (203) 762-8357

REDUCE THE COST OF COBOL PROGRAMMING

The "SYSCOM COBOL DOCUMENTATION SYSTEM" exploits the documentation capabilities of COBOL.

• ATTACKS THE REAL PROBLEM-THE SOURCE LANGUAGE.

Generates sequentially related paragraph names.

Can change data element mnemonics to descriptive data element names or generate sequential, record related descriptive names.

Produces paragraph name cross reference.

Produces data element cross reference.

• LESS EXPENSIVE TO PURCHASE AND USE THAN FLOW CHARTING SYSTEMS.

• CHANGES TO THE PROGRAM ARE FASTER TO IMPLEMENT SINCE THE DOCUMENTATION AND PROGRAM LISTING ARE ONE IN THE SAME.

For more information please contact

SYSCOM

A Division of
Republic Corporation
2409 Sepulveda Boulevard
Manhattan Beach, California 90266
(213) 372-2181

Selective Information Retrieval System

A new computer program that allows you to -

* Select records from any sequential tape or sequential disk file

* Save specific information from the records selected

* Use any condition of selection

* Begin fields used in conditions of selection in any byte of a record

* Use up to fifty "AND"/"OR" conditions in selecting any class of record

Designed for S/360, DOS, 32K and up. Send for full details.

PRICE: Upon Request

Contact: L.H. Baker
Pioneer Data Systems
1206 Mulberry Street
Des Moines, Iowa 50308

COBOL USERS

DETOC

- INCREASES PRODUCTION
- REDUCES COSTS
- IMPROVES SYSTEM EFFECTIVENESS

Use DETOC PROCESSOR with decision tables to cut designing, programming, debugging, and maintenance time.

DETOC, ISL's new Decision Table to COBOL Processor, is available now through our complete leasing program that includes ongoing maintenance, training and retrofitting of improvements. For more data, call collect or write:

Howard Conrad

INFORMATION SYSTEMS LEASING CORP.



THE PLAZA
JENKINTOWN, PA
19046
PHONE: 215/885-2540

Project Control for 1130 -
Precedence C.P.M.

2 to 4 times the speed and capacity (7200 Activities - 80 LPM) of the Library Program. Includes Dollars/Activity, Cash Flow, Forecasting, Resource Leveling, Pay Estimate/Request, Summary Bar Chart, Change File, etc. \$4500 includes installation assistance. Write C.M.S., Box 90, Haddonfield, N.J. 08033 for Full Details.

SPEED PROGRAM PRODUCTION WITH

BOCOL

The New, Simplified Computer Language that Solves Programming Problems

Program production bogged down? BOCOL (Basic Operating Consumer Oriented Language) speeds production by solving many of your programming problems.

BOCOL is simple and streamlined - to get you from program creation to program production faster.

NOVICE programmers can write BOCOL statements immediately. BOCOL's clear and precise statements relieve experienced programmers of routine jobs.

BOCOL is a true one-pass compile and process language. It requires far less keypunching time, no excessive computer time for assembling and compiling.

BOCOL saves time, saves money, simplifies operations. We'll show you how it takes the pressure out of being busy. Fill in and mail the coupon below now.

Fimaco, Inc.

220 W. Washington Square Philadelphia, Pa. 19106 Phone: 215/853-1000

2 Penn. Plaza, Suite 1000 New York, N.Y. 10001 Phone: 212/680-3274

FIMACO, INC., 220 W. Broad St., Phila., Pa. 19106

Please send me a BOCOL brochure.

I am using computers.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

STATE/ZIP _____

cobol MAIN-GEN

Generate Edit Verification and File Maintenance programs in Cobol. Complete operational systems in ONE HOUR.

Scorpio Data Systems Inc.
Tallman Center
Tallman, New York 10952
(914) 357-5845

360 COBOL (Disk/Tape)

PAYROLL/PERSONNEL SYSTEM Series of 16-22 easy-to-maintain programs. Handles multi-company/state, hourly & salary payrolls. Unique union matrix (if required) to process unlimited union or special pay configurations. Complete file maintenance, documentation, JCL, etc. Several versions available. Contact us about references, custom modifications and detailed info. All versions \$4,500.

COMM/SCI SYSTEMS CORP.

785 Market Street
San Francisco, California 94103
(415) 392-5379

Rapid Access Management Information System

RAMIS retrieves information, manages files, generates reports automatically on your 360 OS.

Call: (301) 656-2870

MATHEMATICA

4905 Del Ray Avenue
Bethesda, Md. 20014

360 Payroll System - 100% COBOL -

Series of 23 programs which process hourly and salaried payrolls in a multi-company environment. Liberal deduction capabilities. Full labor distribution reporting. Complete file maintenance facilities. Excellent documentation. Runs on IBM 360 with 32K and two 2311 Disk Drives. This system is now being used and has proven highly successful.

PRICE: \$ 5,000.

Levin-Townsend Service Corporation
One Decker Square
Bala Cynwyd, Pa. 19004

AUTOFLOW

An automatic flowcharting system that produces 2 dimensional flowcharts directly from Cobol, Fortran, PL-1, and assembly language input.

Autoflow also produces listings of syntax errors, logic errors, data-name cross reference, label (or paragraph or statement number) cross reference index, and alphanumeric label index. Available for: IBM 360 systems, H-200 systems, Spectra 70 systems, IBM 1400 and 7090 systems. Write for literature and free demonstration.

PRICE: Upon request



Contact: Applied

Data Research

Route 206 Center

Princeton, N.J. 08540

SCORE

Information Retrieval & Reporting System

does its thing with

IBM 360
Honeywell 200
RCA Spectra 70
UNIVAC 1108
Burroughs 5500

25 major users ordered it, are using it, are happy with it.

Seminar:

April 22-Phila., Pa.

For details contact
Robert P. Wolk at
215 WA 5-8424



Atlantic Software Inc.

Software Marketing Specialists
Lafayette Building, 5th & Chestnut Sts
Philadelphia, Pa. 19106

we are a service bureau -



• Programs are yours to use on your own equipment when production agreements expire.

• Total Support (Key Punching - IBM 360-40 Computer).

• Programming in Cobol.

• Ideal way for small business to get started in data processing. Programs will be completely tested when you are ready to take over.

CALL NOW!

DATA CENTERS, inc.

209 WEST JACKSON BOULEVARD,
CHICAGO, ILLINOIS 60606
312-922-6624

CONTRACT RATES SOFTWARE FOR SALE

7 col. inch	\$63.00
6 col. inch	\$56.00
5 col. inch	\$49.00
4 col. inch	\$42.00
3 col. inch	\$35.00
2 col. inch	\$28.00
1 col. inch	\$14.00

Minimum run at these rates 10 weeks (prepaid).

SOFTWARE FOR SALE

ADVANCED MANAGEMENT SYSTEMS, INC.

Presents

AMS

RECORD SELECT PROGRAM (RSP)

Inexpensive fourth generation file management software for the IBM 360 and RCA Spectra series of computers.

RSP can be used for such tasks as:

- Report generation
- File update
- Selection of and formatting data from multiple input files (one pass) for distribution to multiple output files
- Conversion of files from one format to another

RSP's advantages are:

- May be used by programmers and non-programmers alike
- Small core requirements
- Savings on machine run time costs (up to 25%)
- Reduces total programming costs (up to 70%)
- May be purchased in modules
- Comparatively inexpensive

For Full Information



Call or Write

ADVANCED MANAGEMENT SYSTEMS, INC.

1833 E. 17TH STREET
SANTA ANA
CALIFORNIA 92701

meet the world's first
FORTRAN IV

TIME—SHARING BUSINESS PACKAGE

It performs the general business accounting functions at a teletype terminal, including invoice and statement preparation, accounts receivable, accounts payable, payment check preparation, inventory control, cash transaction records, customer accounts, payroll, general ledger, and profit and loss statements. Price for the package ranges from \$15,000 to \$35,000, depending upon the hardware system — full documentation and on-site training included. Quotation on special time-sharing applications available on request.

we also offer

REAL TIME SCIENTIFIC PROGRAMMING

We have extensive experience in real-time scientific systems and hybrid simulation, consulting and job programming.

CCA

Computing Corporation of America

for further information call:
(303) 781-6638
R. W. Steinberger, V.P./Marketing
3385 South Bannock
Englewood, Colorado 80110

Mr. System

A complete ENGLISH LANGUAGE RETRIEVAL SYSTEM compares to packages selling for \$10,000 and up. SAVES programmer time on one-time and repetitive reports. If you're re-writing or converting programs, Mr. System will replace report generators.

COBOL—DOS—32K minimum.

Selects, Sorts, Accumulates, and Prints report to your specifications.

Installed by mail only \$2500 with complete User and Programmer Manuals.

Write:

Mr. System

Information Science Incorporated
New City, Rockland County, N.Y. 10956

New "Load and Go" Report Writer REPO/360

"Special" Reports reach mgmt. while still "special"

Executes up to 20% faster than COBOL or RPG

NO — Compilation, Link-Editing, Cataloging

Diagnostics complete & extensive

Easy to Learn—Programmer, ½ day; Non-Programmer, one day

Training & Maintenance included

Data & Information Products, Inc.

(A Subsidiary of Applied Data Research, Inc.)

10 West Main Street
Park Ridge, Ill. 60068
(312) 692-7153

SOFTWARE FOR SALE

Purpose:

To provide a low cost marketplace for general and specific purpose program package for the benefit of both buyer and seller.

Requirements:

Maximum ad size 1 col. x 7 inches.

No Special borders

No reverses

Logos allowed

Minimum order 13 weeks (prepaid)

acopp

Abbreviated COBOL Preprocessor

If your COBOL coding time exceeds one man hour per day, you should be using ACOPP.

- ☐ Reduces coding effort 50%
- ☐ Reduces keypunching 50%
- ☐ No retraining required
- ☐ Uses abbreviated notations for COBOL keywords
- ☐ Intermixes abbreviations and COBOL keywords

SYNERGISTIC SOFTWARE SYSTEMS, INC.

6315 Gulfon
Houston, Texas 77036
713/771-2463

filemake

A new debugging aid to automatically test all program options—saves machine time.

- ☐ Operates with S/360 OS and DOS
- ☐ Compatible with: PL/I, FORTRAN, COBOL, ALC
- ☐ Up to 2000 character records, up to 256 fields per record
- ☐ Automatic field increment/decrement
- ☐ Easy to learn and use

SYNERGISTIC SOFTWARE SYSTEMS, INC.

6315 Gulfon
Houston, Texas 77036
713/771-2463

"FORFLO" IBM 1130/1800 DOCUMENTATION SYSTEM

System Consists of 2 Parts:

- Resequences FORTRAN statement numbers by fives, adjusting all branch and I/O statement numbers accordingly. Replaces constant logical unit numbers with variables for easy program conversion (user option). Punches new source deck titled and numbered in columns 73-80.
- Flowcharts any 1130/1800 FORTRAN program from source deck. Shows DO loop nesting. Draws complete flowlines. Separates input and output to allow flowcharting during off-shift time.

"FORFLO" runs on any 8K, 1130 w/disk and line printer or equivalent 1800. Runs in stacked job mode. No need to remove monitor control cards. System supported and maintained.

Send a duplicate FORTRAN deck for free demo and more information.

Price — \$480



DNA Systems
2415 W. Stewart Ave.
Flint, Michigan 48504
(313) 789-4402

Software & Systems Services
—Specializing in 1130/1800

WHY GUESS? MEASURE!

Use SMS/360 products to determine:

- ★ Program Efficiency
- ★ Configuration Balance
- ★ I/O—Compute Ratios, etc.

Available for lease or purchase, OS or DOS.

For details, contact —

Boole & Babbage Inc.

(415) 961-4440

1121 SAN ANTONIO ROAD
PALO ALTO, CALIF. 94303

Data & Information Products, Inc. representatives in:

New York	Atlanta
Chicago	Kansas City
Detroit	Philadelphia
Milwaukee	Cleveland
Dallas	

"I've got lots of data... but no information!"

If information you need for day-to-day decisions is being hoarded by your IBM 360, Spectra 70, or IBM 1401 computer, investigate

EASYTRIEVE 300

Product Software by MSS

EASYTRIEVE is an information retrieval and reporting system that bridges the gap between computerized information files and executives, managers, and supervisors (with or without computer experience) requiring access to the files for day-to-day business decisions.

PRODUCT BRIEFINGS

May 6, Pittsburgh
May 7, Detroit
May 8, Chicago

For details, write or call:

MR. SHELDON T. KATZ
Vice-president

MANAGEMENT SCIENCE SYSTEMS

1530 East Jefferson Street
Rockville, Maryland 20852
(301) 427-1840

Subscribe To
COMPUTERWORLD
\$9.00 - 1 Year
60 Austin Street
Newton, Mass. 02160

TRW Systems Launches Study Of Air Pollution

WASHINGTON, D.C. — Air pollution, a controversial and serious problem in our cities, is now being subjected to a computer-oriented study by TRW Systems Group under agreement with the National Air Pollution Control Administration.

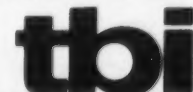
The computer will be used to produce an analysis of the regional nature of the pollutants and geographical types of pollution to facilitate regional control and special handling of local problems.

TRW also will be conducting studies into effective techniques for controlling special types of pollution and the further development of these techniques within the regional definitions at which the study arrives.

At a higher level, the regional analyses will be used to develop effective national policy which, it is hoped, will facilitate this regional control. Long-range studies also are being undertaken to prevent, if possible, large-scale pollution from striking areas which have avoided the problem so far.

computer time

In Baltimore - Call:
(301) 837-5559
19 East 21st St., Balt., 21218



TIME BROKERS, INC.
National Brokers of Computer Time
380 Lexington Avenue
N.Y. 10017

COMPUTERWORLD Advertising Sales Offices:

New York City:

Don Fagan
Grant Webb & Company
509 Madison Ave.
New York, N.Y. 10022
(212) 688-7550

Midwest:

Dennis Collins
Grant Webb & Company
333 N. Michigan Ave.
Chicago, Ill. 60601
(312) 236-5817

San Francisco Area:

Bill Healey
Jules E. Thompson Co.
1111 Hearst Bldg.
San Francisco, Calif. 94103
(415) 362-8547

New England:

R. Ziegel
COMPUTERWORLD
60 Austin St.
Newton, Mass. 02160
(617) 332-5606

Los Angeles Area:

Bob Byrne
Sherwood/Byrne Assoc.
1017 N. La Cienega Blvd.
Los Angeles, Calif. 90069
(213) 657-6221

Elsewhere:

Neal Wilder
National Sales Manager
COMPUTERWORLD
60 Austin St.
Newton, Mass. 02160
(617) 332-5606



We don't want a machine to run our machines.

It hasn't come to that yet.

What we want are living, breathing people who like to play with, and maybe even outsmart, our 360's.

What we need are:

Systems Analysts.
Management Analysts.
3rd Generation Programmers.

We'll consider you whether you have a lot of experience. Or a little. Or none at all.

We'll consider you a little more, if you have a background in insurance systems.

And we'll consider you for openings in the following fields:

- Computer Systems
- Data Communications

- Manual Systems
- Work Flow
- Software
- Standards

Before you consider us, we'd like to tell you a little more about ourselves.

INSCO's a new data processing company that's bigger than your expectations.

We're the brain child of The Continental Corporation, whose assets are over three billion dollars.

And we're set up to handle all kinds of data processing and business systems for all kinds of firms.

At present, we're pushing data through four model 50's (three with 512K), and eight model 30's. We're writing in Cobol and

Assembler language under full O/S control.

And for the future, we have larger equipment on order.

If you're interested in joining us, just write us a letter all about yourself and mail it to:

The INSCO Systems Corporation
Dept. CW-1
12 Gold Street
New York, N.Y. 10038

If we keep growing the way we've been growing, there'll be plenty of opportunities for advancement.

And when you move up, we'll have to replace you.

With another human being who likes to play with and outsmart machines.

An equal opportunity employer



April 23, 1969

Page 21



Table-sized remote terminal will be used for financial OTC analysis.

OTC Data Bank Available From Standard & Poor's

NEW YORK — Standard & Poor's Corp. unveiled before a recent gathering of financial editors a new, computer-readable data bank which, for the first time, enables the financial performance of companies whose stocks are sold over the counter to be analyzed as extensively as those listed on the New York, American, and regional stock exchanges.

Use of the OTC data bank is not restricted to firms large enough to possess their own computers, since Standard & Poor's will lease the bank to time-sharing service organizations around the country.

The data, which is contained on magnetic tape, consists of detailed financial information for each year of a company's operation dating back to 1963, or year of inception if later.

It includes annual income statement and balance sheet statistics collected from annual reports, SEC reports and, in many cases, from direct correspondence with corporate officials.

Much of it, claims the company, is not readily available anywhere else.

Where necessary, figures have been adjusted for comparability in accordance with accounting definitions developed exclusively for this purpose.

Remote terminals which resemble a television screen with an attached keyboard, and which are connected to a centrally located computer via a telephone line, permit subscribers to request data and see replies appear on the screen before them, according to the company.

The initial version of the data bank contains data on 500 of the most actively traded OTC stocks. By June of this year the number of companies will be expanded to 1,000, and by the end of 1969 a total of at least 1,500 companies will be included.

Along with S&P's daily price tapes, the OTC data bank will enable analysts to perform up-to-the-minute, in-depth analysis of practically any nature.

The new OTC data file represents the newest category in Standard & Poor's overall financial data bank service which is known commercially as Compustat. In addition to the first increment of OTCs, the Compustat inventory now consists of data for the past 20 years on each of 2,500 companies, including all industrials on the New York and American Stock Exchanges, 100 utilities, over 200 insurance companies, and 500 Canadian companies.

Currently in the process of development is still another new category covering banks, savings and loan companies, management firms, mutual funds, and mutual fund management companies.

Mohawk Data Sciences, Photon Disclose Agreement in Principle

BOSTON — Mohawk Data Sciences Corp. and Photon, Inc. have announced that an agreement has been reached "in principle" to combine the businesses of both their companies.

The proposed merger would give stockholders of Mohawk one share of the "continuing company" for each share of stock presently held, and stockholders of Photon would get 0.4 share of the continuing company for each share of Photon.

The merger is contingent upon the satisfactory resolution of legal, financial, and administrative details, and the preparation of the definitive merger agreement which will be submitted at a later date for approval by both boards of directors and the shareholders of each company.

The proposed merger is expected to qualify as a tax-free exchange for federal income tax purposes, although it has not yet been decided if a tax ruling will be sought, according to the companies.

V.E. Johnson, chairman of the board and president of Mohawk, and R.M. Campbell, president of Photon, in a joint release stated, "the prospects of both companies should be considerably enhanced through the proposed combination."

Although company officials have not said which company would be the surviving company, a spokesman close to the company believes the continuing company will be called MDS-Photon Inc.

"By taking advantage of common facilities, jointly developing

new projects, supplementing MDS's large field-support network with Photon specialists, expanding the rental program of MDS with Photon systems, and by combining MDS's entry, communications, data collection, and media conversion equipment with Photon computer and key-driven phototypesetting systems, the new organization would have one of the broadest lines of auxiliary data processing equipment and marketing support ser-

vices offered by any independent manufacturer in our industry.

"The benefits accruing to such an enterprise, which would represent a new force in the data marketplace both here and abroad, could be substantial."

Photon, Inc., traded over-the-counter, manufactures and sells phototypesetting equipment to the printing, publishing, data processing, and graphic arts industries.

Terms Announced Between Honeywell and Collins

MINNEAPOLIS, Minn. — Honeywell Inc. and Collins Radio Co. have announced the proposal through which Honeywell would acquire Collins.

The agreement, released in a joint statement by James H. Binger, Honeywell chairman, and Arthur A. Collins, president and chairman of Collins, proposes the acquisition "on the basis of 56/100 of one share of common stock of Honeywell for each of the outstanding 2,967,427 shares of Collins common stock."

At recent stock prices, the value of this proposal is in excess of \$200 million.

The companies also indicated that "consummation of the transaction will be subject, among other things, to the approval of the terms by the board of directors of both corporations

and to necessary director and stockholder approval of a definitive agreement." There is a possibility that approval by Honeywell shareholders wouldn't be needed.

Collins is presently fighting a proposed takeover by Electronic Data Systems that Collins terms "hostile to the interest of the company."

In fiscal 1968, ended last July 28, Collins had a net income of \$13 million, or \$4.44 a share, on sales of \$447 million, up from \$12.1 million, or \$4.42 a share on sales of \$438 million in fiscal 1967.

In comparison, in all of 1968, Honeywell had a net income of \$50.5 million, or \$3.41 a share, on sales of \$1.28 billion, up from \$42.3 million, or \$2.85 a share, on sales of \$1.05 billion in 1967.

RCA Report Emphasizes Computers

RCA sales and earnings in the first quarter of 1969 advanced to new all-time highs, continuing the pattern of growth that has produced seven consecutive years of record progress, according to Robert W. Sarnoff, president and chief executive officer.

The RCA chief executive found promise for the future in various aspects of the company's diversified operations, with particular emphasis on advances in the computer area.

He said domestic computer revenues in the first quarter were up 43% over a year ago.

"We are moving well ahead of the industry in terms of computer growth," Sarnoff said. "In the last three years, our domestic computer shipments have increased 120% in dollar value, compared to an industry gain of 58%."

"We believe we are in the vanguard of new computer technology, with our primary effort concentrated in the growth areas of computer communications and time-sharing. We are taking aim at second place in overall industry ranking, and we hope to attain it in the foreseeable future," Sarnoff said.

Net profit was \$40.8 million, an increase of 5% over the previous first quarter record of \$38.7 million in 1968. Earnings per common share rose to 63 cents from 60 cents in the same period last year.

Sales for the first quarter were \$769.9 million, an increase of \$11.7 million over the same period a year earlier. The previous quarter record of \$766.8 million was established in 1967.

"A softening in certain areas of the economy is becoming apparent," Sarnoff said, "and this places a greater premium than ever on management's ability to keep a tight rein on administrative costs, inventories, and other variables in the manufacturing process. We are cautiously optimistic about the economy's continued advance, but we intend to keep our guard up in the months ahead."

Boothe Reports Record First Quarter Revenues

SAN FRANCISCO — Boothe Computer Corp. reported record first quarter revenues and earnings at the annual stockholders meeting on April 8.

In announcing the record quarter, D.P. Boothe, Jr., chairman, stated that the company now has \$180 million committed to computer systems in the United States, Canada, and Europe.

Revenues reached an all-time high of \$9,033,686 and earnings were \$711,700, or 43 cents per share, on 1,666,117 outstanding

shares for the first quarter ending March 31.

This compares with revenues of \$1,458,353 and earnings of \$176,937, or 14 cents per share, on 1,270,000 outstanding shares for the same period a year ago. (Actual earnings were \$84,216, or 7 cents per share, before a 1967 tax loss carry-forward was utilized.)

360/40

COMPUTER TIME

- 131K, 2 channel
- Four 2311 disks
- Six 2401 dual density tapes (800/1600)
- Two 1100 LPM Printers

- All Shifts: \$80-\$120/hr.
- FULL SHIFTS also available at competitive prices.

- All peripherals
- Key punching
- Programming
- Messengers
- Two 360/30's also
- Application packages

SSI Call: 212/687-2100 L. Krassner

STRATEGIC DATACENTERS, INC.
25 West 43rd Street—New York, N.Y. 10017
A Subsidiary of STRATEGIC SYSTEMS INC.
Corporate offices: 605 Third Avenue, New York City 10016
FACILITIES ALSO IN WASHINGTON, D.C.

Optical Scanning, Up 25%, Leads In Otherwise Uneventful Market

By A.B. Williams
CW Staff writer

During the week ended April 11, only one of *Computerworld's* five sectors showed any noteworthy change. A 15-point (25%) rise in Optical Scanning by itself had a major effect on the Peripherals group. Also featured were Alphanumeric, up 4-1/2 (11.4%) and Computer Equipment, up 1-3/8 (11.2%).

Overall, the Composite index was up 1%, slightly better than the Dow Jones industrial average, which advanced 6.16 points (0.64%).

During the last four months, the general pressure on stock prices has been felt by computer stocks, with Computer Systems, both as a group and as individual issues, acting the least unfavorably. Net percentage changes between the Nov. 30 close and April 11 have been relatively undramatic.

The hardest-hit group has been Leasing, which has seen seven issues drop below the March 1, 1968, base prices.

The group itself has gone from an index of 134.0 on Nov. 30 to 102.1 (barely over breakeven) on April 11, despite the starring role played by Leasco Data. While down some from its high, Leasco still shows a hefty 114.2 gain from base.

In the leasing group, only Levin-Townsend Computer

made a substantial gain over the week, up 6-7/8 (18.3%) to 44-3/8.

During the week under review, the Software sector was unusually stable, reflecting only two changes of over 10%, with Computing & Software up 10.8% and NCA up 14.3%.

Off the index, Matrix was down 2 (22.2%) to 7. The range and pattern of action in this issue reflect the great excitement available to the impatient investor.

Reflections on Viatron

Among more recent issues, Viatron stock has had a rather exciting short life. From an underwriting at 15, it has gone at least to 36 bid, and closed on April 11 at 22, after going as low as 20.

Viatron has been in the news recently. The company has agreed to acquire Photics Research Corp., of Montgomeryville, Pa.

Photics, which had an operating loss of \$97,010 on sales of \$727,609 in the year ended June 29, 1968, makes photographic masks used in the design and manufacture of integrated and MOS circuitry.

Photics will operate as a wholly owned subsidiary of Viatron.

Viatron also appears to be having problems with production. According to *Business Automation News Report*, deliveries

originally scheduled to have started this summer may slip to the end of the year.

Their low rental price (\$39 per month for the basic System 21) is said to be dependent upon state-of-the-art components for which Viatron appears not to have yet signed a supply contract, according to the News Report. However, a source close to Viatron told *Computerworld* that contracts have been made and material is slowly arriving.

The Big Picture

Among recent stock commentaries there has been a large amount of indecision, amounting almost to outright disagreement, both over the near-term market outlook, and over the attractiveness of individual issues. Although some of this can be attributed to the difference between long- and short-range goals, the only subject of agreement is the long-term view of the market as a whole, and what effect inflation must have.

It would appear that many issues, including some of those in *Computerworld's* tables, must be regarded as short-term, basically trading-type securities.

As an illustration, the past four months' trading in Optical Scanning will serve well, with the week under review providing a classic example of reaction to an apparently oversold situation.

COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED APRIL 11, 1969

COMPUTER SYSTEMS					WEEK NET		WEEK %	
EXCH	1969 RANGE	CLOSING PRICE			CHANGE		CHANGE	
N	258-282	257 3/4	BURROUGHS CORP		+ 9 5/8		3.88	
N	67- 48	64 1/4	COLLINS RADIO		+ 4 1/2		7.53	
N	148-130	135 1/4	CONTROL DATA CORP		- 2 3/8		-1.73	
A	171-148	157	DIGITAL EQUIPMENT		- 3		-1.88	
N	25- 19	19 5/8	ELECTRONIC ASSOC.		- 1/2		-2.48	
N	92- 85	91 5/8	GENERAL ELECTRIC		+ 1 1/4		1.38	
N	89- 76	83 5/8	HEWLETT-PACKARD CO		- 2 5/8		-3.84	
N	128-109	125 3/4	HONEYWELL INC		+ 1 1/2		1.21	
N	314-293	312 1/4	IBM		+ 1 1/2		.46	
N	122-108	127 1/2	ICR		+ 5 1/2		4.51	
N	46- 41	43 3/4	RCA					
N	49- 38	40	RAYTHEON CO		+ 1/8		.31	
O	33- 29	29	SCI. CONTROL CORP		- 4		-12.12	
N	117- 83	114	SCIENTIFIC DATA		+ 1 3/8		1.22	
N	53- 44	52 1/2	SPERRY RAND		+ 1 1/2		2.94	
A	31- 27	30 1/2	SYSTEMS ENG. LABS		+ 1/2		1.67	

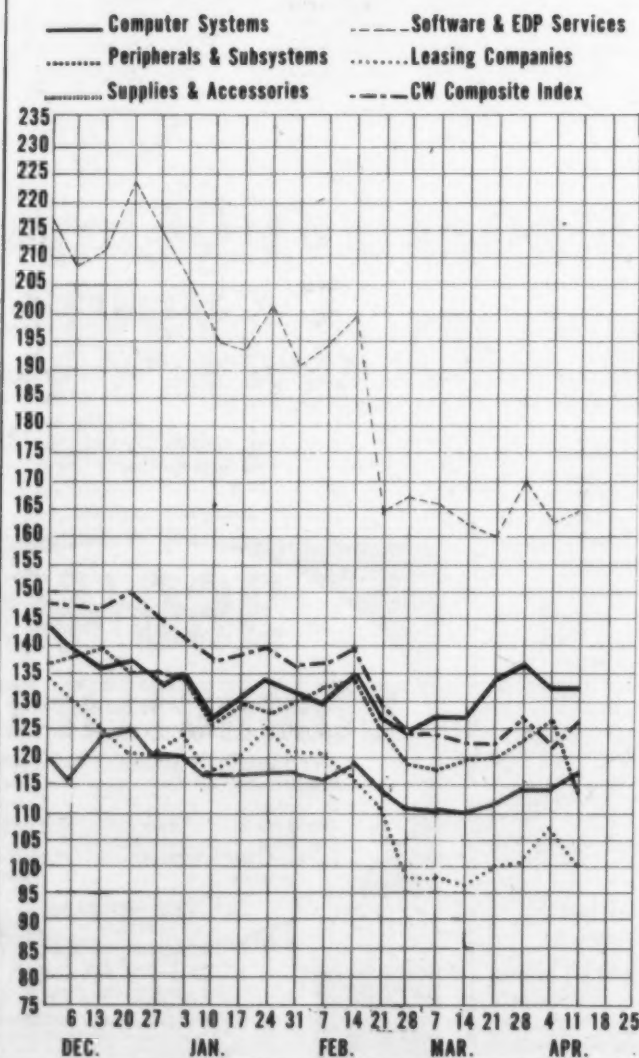
PERIPHERALS & SUBSYSTEMS					WEEK NET		WEEK %	
EXCH	1969 RANGE	CLOSING PRICE			CHANGE		CHANGE	
N	75- 65	71 3/4	ADDRESSOGRAPH-MULT		- 2 3/4		-3.69	
O	46- 40	44	ALPHANUMERIC		+ 4 1/2		11.39	
N	39- 35	38 3/8	AMPEX CORP		+ 5/8		1.66	
O	19- 15	17 3/4	BOLT, BERANEK & NEW		+ 3/4		4.41	
N	14- 13	13 1/8	BUNKER-RAMO		+ 1/4		1.24	
A	35- 31	31 5/8	CALCOMP		- 1 1/8		-3.44	
O	38- 28	28	COGNITRONICS		- 1 1/2		-5.88	
O	13- 12	13 5/8	COMPUTER EQUIPMENT		+ 1 3/8		11.22	
A	26- 18	18 1/4	DATA PRODUCTS CORP		- 1/8		-.68	
O	28- 17	17 1/4	DIGITRONICS		- 1/2		-2.82	
O	62- 47	56 1/2	ELECTRON MEMORIES					
O	12- 11	12	FABRI-TEX		- 3/8		-3.83	
O	37- 29	34	FARRINGTON MFG		- 1 1/4		-3.55	
O	21- 15	17	INFORMATION DIS		+ 1/2		3.83	
A	34- 28	24 1/4	MILGO ELECTRONICS		+ 1 7/8		8.38	
A	79- 59	71	MOHAWK DATA SCI.		- 3 1/4		-4.38	
O	98- 69	74	OPTICAL SCANNING		+ 15		25.42	
O	28- 25	25 3/4	PHOTON INC.		- 1/4		-.96	
A	35- 27	30	POTTER INSTRUMENT		- 1/4		-.83	
O	71- 65	68	RECOGNITION EQUIP		+ 1		1.49	
A	22- 18	18 1/4	RTXON ELECTRONICS		- 7/8		-4.58	
N	60- 48	45 3/8	SANDERS ASSOCIATES					
O	85- 68	66	SCAN DATA		- 1		-1.49	
O	36- 22	26 1/2	TALLY CORP.		+ 1		3.92	
N	270-247	247 5/8	XEROX CORP		- 4 1/8		-1.64	

SUPPLIES & ACCESSORIES					WEEK NET		WEEK %	
EXCH	1969 RANGE	CLOSING PRICE			CHANGE		CHANGE	
O	37- 37	39 1/2	ACME VISIBLE		+ 4 1/2		12.86	
N	21- 18	18 1/2	ADAMS-MILLIS CORP		- 3/8		-1.99	
O	27- 23	26 1/2	BALTIMORE BUS FORM		- 1		-3.64	
A	28- 19	21 5/8	BARRY WRIGHT		+ 2 5/8		13.82	
O	44- 35	37 1/4	DATA DOCUMENTS		- 3/4		-1.97	
N	42- 37	41	ENNIS BUS. FORMS		+ 1		2.58	
N	80- 65	79	MEMOREX		+ 3 3/8		4.46	
N	106- 98	102 1/2	3M COMPANY		+ 1 1/2		1.49	
O	33- 25	32 1/2	MOORE BUS FORMS		+ 1		3.17	
N	46- 37	39	NASHUA CORP.		- 1/4		-.64	
O	43- 40	44	REYNOLDS & REYNOLD		- 4		-8.33	
O	28- 24	27 3/4	STANDARD REGISTER		- 1		-3.48	
N	33- 29	29 1/2	UARCO		- 3/8		-1.26	
A	20- 14	16 1/4	WABASH MAGNETICS		- 1		-5.88	
O	32- 29	33 1/4	WALLACE BUS FORMS		+ 1 1/4		3.91	

SOFTWARE & EDP SERVICES					WEEK NET		WEEK %	
EXCH	1969 RANGE	CLOSING PRICE			CHANGE		CHANGE	
O	14- 9	9 1/4	ADVANCED COMP TECH		- 3/4		-7.58	
O	36- 31	35	APPLIED DATA RES		- 1/2		-4.55	
O	12- 8	10 1/2	ARIES		+ 3/4		1.85	
A	73- 64	72 1/2	AUTOMATIC DATA PRC		+ 3/4		7.14	
O	18- 9	9 3/4	AUTO SCIENCES		- 3/4		-1.52	
O	17- 12	12 1/2	BRANDON APPL SYS		- 1/2		-3.85	
A	28- 16	16 1/4	COMPUTER APPL		- 1/4		-1.52	
O	16- 12	12	COMPUTER ENVIRON		- 1 1/2		-11.11	
O	47- 34	42	COMPUTER NETWORK		+ 4		18.53	
N	65- 52	60 5/8	COMPUTER SCIENCES		+ 3/8		.62	
O	35- 33	33	COMPUTER USAGE		- 1 1/2		-4.35	
A	92- 45	46	COMPUTING & SOFT.		+ 4 1/2		18.84	
O	24- 13	13 1/2	DATAMATION SERVICE		- 3		-18.18	
O	17- 11	14 1/2	DATATAB		+ 1/2		3.57	
O	15- 10	10 1/4	DIGITEX		- 3/4		-6.82	
A	36- 27	31 3/4	ELECT COMP PROB		+ 3 1/2		12.39	
O	38- 28	24 1/4	INFORMATICS		+ 1 1/4		5.43	
O	28- 4	7	MATRIX CORP.		- 2		-22.22	
O	22- 11	12	NAT COMP ANALYSTS		+ 1 1/2		14.29	
A	54- 24	29 1/8	PLANNING RESEARCH		- 1 3/8		-4.51	
O	11- 8	9 1/2	PROGRAMMING & SYS		+ 1 1/2		18.75	
O	15- 6	6 1/2	SOFTWARE SYSTEMS		+ 1/2		8.33	
O	37- 17	18	STRATEGIC SYS		- 3		-14.29	
O	17- 11	17	TBS COMP CENT INC.					
O	12- 6	9	UNITED DATA CENTER		+ 3/4		9.09	
O	148- 8	99	UNIVERSITY COMP		+ 6		6.45	
O	38- 28	34 3/4	URS SYSTEMS		+ 1/4		.72	
O	38- 13	15	U.S. TIME-SHARING		- 1		-6.25	

LEASING COMPANIES					WEEK NET		WEEK %	
EXCH	1969 RANGE	CLOSING PRICE			CHANGE		CHANGE	
O	48- 37	40 3/4	BOOTH COMPUTER		+ 1 3/4		4.49	
O	18- 10	10 1/2	COMPUTER EXCHANGE		- 1 3/4		-14.29	
A	33- 22	22 3/8	COMPUTER LEASING		- 1 5/8		-6.77	
O	14- 8	10 1/2	CONT COMPUTER		+ 1/4		2.44	
O	12- 10	10 3/8	CYBER-TRONICS		- 1 1/8		-9.78	
A	57- 44	47	DATA PROC. F & G		- 2 1/8		-4.33	
O	11- 10	10 1/4	DATRONIC RENTAL		- 1/2		-4.65	
A	49- 44	44 3/4	DEARBORN COMPUTER		- 3		-6.28	
O	11- 10	12 1/4	DPA, INC.		- 3/8		-2.97	
A	45- 31	31 1/4	GRANITE EQUIPMENT		- 2 1/2		-7.41	
A	27- 19	20	GREYHOUND COMPUTER		- 1 5/8		-7.51	
A	139- 36	42 1/8	LEASCO DATA PROC		+ 1/8		.30	
O	9- 7	7 1/2	LECTRO COMP LEAS		- 1/4		-3.23	
A	54- 37	44 3/8	LEVIN-TOWNSEND CMP		+ 6 7/8		18.33	
O	18- 5	5 3/4	LNC DATA, INC.		+ 1/4		4.55	
O	14- 9	9 7/8	MANAGEMENT ASSIST		- 1/8		-1.25	
A	39- 30	31 1/8	NATIONAL EQUIPMENT		- 2 1/8		-6.39	
O	12- 8	8	NCC LEASING		- 3/4		-8.57	
A	43- 38	31	RANDOLPH COMPUTER		- 5/8		-1.98	
O	34- 22	22	SYSTEM CAPITAL		- 3		-12.88	
A	26- 21	23 1/2	U.S. LEASING		- 7/8		-3.59	

Computer Stocks Trading Index



Informatics Buys Rucker Data Centers

SHERMAN OAKS, Calif. — Informatics Inc. has completed the purchase of two computer data centers from The Rucker Co., Oakland, Calif., for 148,000 shares of Informatics stock with a current value of over \$3 million.

Dr. Walter F. Bauer, president of Informatics, said that the data centers, located in Oakland and Los Angeles, will be combined with a third center in the San Fernando Valley. Informatics data centers will operate seven medium-scale IBM computers in the three centers.

"Plans are already being made to put the Informatics centers on-line to bring data services into the customer's office," said Bauer.

The Informatics service would be a complete package, he explained, including systems analysis, programming, on-site procedure development, and customer personnel training in operations and Mark IV programming.

Bauer said the Rucker data center acquisition is a step toward the establishment of data centers nationwide.

Informatics also has agreed in principal to purchase 70% interest in Dataplan, Inc., New York-based subsidiary of Interpublic Group of Companies, for \$1.6 million cash.

Honeywell Receives U.S. Job-Training Grant

WELLESLEY HILLS, Mass. — Honeywell's Electronic Data Processing Division has received a two-year, \$396,000 grant from the U.S. Department of Labor to train 130 persons in computer

production work.

Thomas R. Lawrence, a manpower resources specialist for Honeywell EDP who will head the program, said training will begin in June at the division's facility on Soldiers Field Road in the Brighton section of Boston.

The first class will comprise approximately 26 persons. Students, both men and women, will receive 13 weeks of orientation and skill training at the Brighton facility before going to an EDP production line for on-the-job training.

Lawrence said the students will receive training in such jobs as wiring computer backboards and building printed-circuit boards, and some of the students will be trained as production line inspectors.

WANTED

729 Model V Tape Drives

Major Company wishes to purchase four (4) 729 Model V Tape Drives for 1969 delivery. Please supply complete information, serial numbers, delivery date, and price. Shenandoah Life Insurance Company, P.O. Box 2421, Roanoke, Virginia 24010

\$5 MILLION AVAILABLE NOW TO BUY 3RD GENERATION COMPUTERS.

Write, wire, call



THE COMPUTER EXCHANGE INC.
30 East 42nd Street, New York, N.Y. 10017
(212) 661-5870

ROBERT E. RADICAN AND COMPANY

FINANCIAL AND INVESTMENT CONSULTANTS.

SPECIALISTS IN MERGERS, ACQUISITIONS

AND CORPORATE FINANCING.



274 WEYBOSSET STREET,

PROVIDENCE, R.I. 02903

TEL. 401-751-6900

Computers: What's their future?

The special Review and Forecast issue of *EDP Industry Report*, just published, contains a valuable analysis of the explosive computer industry at a time when there are significant transitions occurring in the EDP market.

Among the issue's features are careful analyses of IBM and the other major computer manufacturers ... industry shipment projections through 1975 ... a presentation of trends to watch for in the industry.

This Review and Forecast issue will bring you up to date on the computer industry.

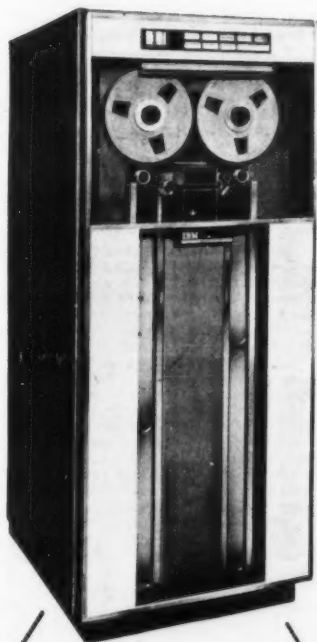
One of the twenty-four issues published throughout the year, this issue can be yours for \$9, or as a free bonus with your subscription — \$75/yr. Write:

EDP Industry Report
Department RF- 2
60 Austin Street
Newtonville, Mass. 02160



specializes in leasing high quality

2nd Generation Computer



We have an immediate
need for 1400 or 7000 series systems with

729 II, IV, V, or VI's.

Will purchase tapes individually or in quantity.

COMMERCIAL COMPUTERS, INC.

7855 IVANHOE AVE., LA JOLLA, CALIFORNIA 92037 • (714) 454-7161
425 BROAD HOLLOW RD., MELVILLE, L.I., N.Y. 11746 • (516) 293-7278

BUY SELL SWAP

DOCUMENT SCANNER, FARRINGTON MODEL 1D 3C, WITH OPTIONS, BATCH HEADER, ACCUMULATOR, LIST PRINTER, TWO LINE READ, MATRIX MARK SCANNING. SALE OR LEASE TERMS. TELEPHONE 212-343-1000 WRITE P.O. BOX 165, FLORAL PARK, N.Y. 11002.

COMPUTER SERVICES FOR AGRIBUSINESS

- Consulting
- Software Franchises
- Custom Programming
- Systems Analysis & Design
- Management Information Systems
- Data Processing

P.O. Box 1077, Davis, Calif. 94516
Area Code 916/756-1050

BUY-SELL-LEASE

Unit Record Equipment
Disc Packs

Computer Leasing

Michiana Leasing Corp.
1814 South Main St.
South Bend, Ind. 46613
(219) 288-1431

IBM Computer Systems and Punched Card Equipment Bought and Sold. International Computer Equipment, Inc.

I-C-E, Inc.
1231 25th St. N.W.
Washington, D.C.
202-293-3910

FOR SALE

All types IBM
Unit Record
Equipment
026, 024, 082, 083
077, 085, 088, 402
407, 084, 108 & 047

TLW Computer Industries
Box 29763, Atlanta, Ga. 30329
(404) 451-1895

COMPUTER ACQUISITIONS CO.

WANTS

- COMPUTERS, ALL MAKES
- UNIT RECORD EQUIPMENT

(404) 636-8000 • BOX 28185
ATLANTA, GA. 30329

026 Key punches

We have 10 for rent, sale or lease purchase. New condition. Can be put under IBM maintenance. We buy, rent, sell DP equip.

Data Rentals
3753 Wilshire Blvd.
213-385-2484

WANTED TO BUY

H200 32K 5 Tape System
Must be under Honeywell maintenance.
CW Box 3056

IBM MACHINES FOR SALE

024-\$550; 026-\$2000;
056-\$400; 077-\$900;
082-\$1000; 083-\$4000;
084-\$6500; 402-\$1100;
403-\$1500; 407-\$4700;
514-\$1400; 519-\$1800;
557-\$4500; 602-\$900;
604/521-\$1900; Disk Packs
(1316) \$200; Burster \$400; Card-
titioner \$300; Verifiers (Hand)
\$100; Panels 50% off.

ALL DP CO.
105 Hinricher
Willow Springs, Ill.
312-839-5164

IBM 7074

SALE OR
LEASE

10K-800 cpi system, 18 to 36 month lease, with or without tapes, unusually large savings. Call or write George S. McLaughlin Associates, Inc., 785 Springfield Avenue, Summit, New Jersey, 07901. 201-273-5464.

BUY SELL SWAP

Purpose:

- To provide at low cost a general market place for equipment, systems, services, supplies and the like for the computer community.

Requirements:

- Minimum ad size 1 column by 2 inches
- No maximum size
- Borders allowed
- Reverses allowed
- Logos allowed
- Lineage discounts apply to large ad or long runs

IBM

- Second Generation Leases
- 20-60% Off IBM Rental
- 12-36 Month Leases
- 1401's, 1440's, 1460's, 7070's, 7074's.

SUMMIT COMPUTER CORPORATION
785 Springfield Avenue
Summit, New Jersey 07901
(201) 273-6900

BankAmerica Buys Services Firm

SAN FRANCISCO — BankAmerica Corp., the one-bank holding company of the Bank of America, has received government approval for its first acquisition — a computer services company. The acquisition is based on an agreement for the purchase of an 80% interest in Digitran Corp. of San Francisco for \$5 million.

The announcement was made jointly by Rudolph A. Peterson, president of both the bank and the holding company, and President John A. Margoes of Digitran Corp.

Digitran Corp. was formed in February by a group of men formerly associated with IBM.

It is engaged in leasing of computer systems, software programming, and management consultant services relating to computer operations.

Levin to Increase Shares

NEW YORK — Levin-Townsend Computer Corp. has called a special shareholders meeting for April 30 to consider a proposed increase in authorized shares to 15 million from its present 10.5 million.

The 10.5 million authorized shares consist of 10 million common and 500,000 preferred shares.

The increase in number of shares will permit the board to designate various classes of stock among the 5 million authorized

shares, while the other 10 million authorized shares will continue to be common stock, according to the company.

NCC Leasing Sells Out \$5 Million in Debentures

NEW YORK — The offering of \$5 million convertible subordinated debentures by NCC Leasing, Inc., Memphis, Tenn., due 1989, was sold out, oversubscribed, and the books closed through underwriters led by Scheinman, Hochstin & Trotta, Inc.

The company is engaged in the business of purchasing and leasing computer and general equipment as well as engaging in the making of short-term commercial loans.

The executive office of NCC Leasing, Inc., is located in Memphis, with branch offices in Chicago and Atlanta.

The company will use the net proceeds to repay short-term and other indebtedness as well as to finance the acquisition of

additional computer and general equipment for lease to others.

GSI Computer Stock Sale Oversubscribed

NEW YORK — GSI Computer Inc.'s first public offering of 500,000 shares of common stock was immediately oversubscribed after reaching the market at \$27 a share.

Underwriters, led by S.D. Fuller & Co., said they exercised their over-allotment privilege and sold an additional 500,000 shares to buyers who didn't receive stock.

The offering, worth \$13.5 million, had been reduced from 1 million shares because of difficulties with regulations in a number of states.

The Danbury, Conn., computer services and graphic communications concern will use the proceeds to increase working capital and to repay its parent company, Graphic Sciences Inc., which owns about 80% of the 2,550,000 common shares outstanding.

New Registrations

OPTOSTATIC SCIENCES, INC., 3259 Winston Rd. South, Rochester, N.Y. 14623, a company which plans to design, develop, manufacture, and market electrostatic office copiers for general business use, and to offer computer consulting services, filed to register 400,000 shares of common stock. Proceeds, at \$5 per share, intended for the design, development, manufacture, and marketing of an electrostatic office copier product line, for the development of a computer consulting service division, for research in the fields of optical lasers and scanners, and for working capital. No underwriter is involved.

COMPUTER CAREERS INC., P.O. Box 431, Town of Newburgh, N.Y., a company engaged in the operation of a data processing school and the furnishing of a magnetic tape Selectric typewriting and cold-type composition service, filed to register 150,000 shares of common stock. Proceeds, at \$6.50 per share, intended to repay short-term bank loans, to establish and operate a combined data processing school and MT/ST cold-type activities in Endicott, Hartford, and Newburgh, to promote the Newburgh school, to meet costs of the company's proposed software operation, and to provide working capital. The underwriter is Russ & Co., Inc., 1600 Alamo National Bldg., San Antonio, Texas 78205.

COMPUTER INVESTORS GROUP, INC., Symphonette Square, Larchmont, N.Y. 10538, a company to be engaged as a holding company operating through subsidiaries and engaged in the business of purchasing and leasing to others electronic data processing equipment, filed to register \$12,500,000 of convertible subordinated debentures, due 1989. Proceeds intended to prepay an equivalent principal amount of secured and unsecured subordinated notes of the company, and to finance the purchase of computer equipment for their domestic subsidiaries. The underwriter is Dominick & Dominick, Inc., 14 Wall St., New York, N.Y. 10005.

FACTSYSTEM, INC., 612 N. Michigan Ave., Chicago, Ill. 60611, a company engaged in the development and marketing of management information systems for "third generation computers," filed to register \$1,500,000 of convertible subordinated debentures, due 1989. Proceeds, at 100% of the principal amount, intended for retirement of short-term indebtedness, addition to the company's working capital, and general purposes including the lease of an IBM 360/30 computer. The underwriter is Alessandrini & Co., Inc., 11 Broadway, New York, N.Y.

BETA INSTRUMENT CORP., 377 Elliot St., Newton Upper Falls, Mass. 02164, a company engaged in the design, manufacture, and sale of CRT display equipment, including display system modules, precision CRT dis-

plays, computer graphical display devices, and computer output microfilm recording systems, some of which are in the developmental stage, filed to register 240,000 shares of common stock. Proceeds, at \$5 per share, intended for continued development of a computer output microfilm system, display system modules, precision displays by other computer display devices; development and expansion of sales and marketing organization; and retirement of indebtedness. No underwriter is involved.

SIGNAL ANALYSIS INDUSTRIES CORP., 12 DiTomas Court, Copaque, N.Y., a company engaged in the design, manufacture, and sale of signal processing and data analysis systems and equipment including spectrum analyzers, digital integrators, correlators, and other related equipment, filed to register 100,000 shares of common stock. Proceeds, at \$6 per share maximum, intended for addition to working capital and for general corporate purposes. The underwriter is Kern Securities Corp., 111 Broadway, New York, N.Y.

BUSINESS INFORMATION TECHNOLOGY, INC., 5 Strathmore Rd., Natick, Mass. 01760, a company engaged in the manufacture and sale of small, high-speed, general-purpose digital computers having industrial, scientific, and educational applications, filed to register 125,000 shares of common stock. Proceeds, at \$12 per share, intended for research and development, marketing, advertising and promotion, capital equipment and tooling, and general corporate purposes. No underwriter is involved.

COMPUTER PRODUCTS, INC., 2801 E. Oakland Park Blvd., Fort Lauderdale, Fla., a company engaged in the design, development, manufacture, and sale of standard products intended to solve certain routinely encountered instrumentation or interfacing problems in process control and real-time test applications, filed to register 150,000 shares of common stock. Proceeds, at \$6 per share, intended for the purchase of capital equipment and the payment of salaries to establish a prototype facility for the manufacture of thick-film hybrid microcircuits, for the planned growth of the company, for new equipment, and for working capital. No underwriter is involved.

ELECTRONIC DATA SYSTEMS CORP., 1300 EDS Center, Exchange Park, Dallas, Texas 75235, a company engaged in designing business information systems for corporate customers and then installing and operating such systems utilizing computers which are owned or leased and operated by EDS, filed to register 3,645,000 shares of common stock. EDS proposed to offer these shares in exchange for up to 2,430,000 shares of common stock of Collins Radio Co., at the rate of 1-1/2 shares of EDS for each Collins share. The underwriter is R.W. Pressprich & Co., Inc.

TELETYPES — COUPLERS
Fixed — Mobile — Portable
(Buy — Lease — Rent)
Supplies
Paper — Tape — Ribbons
COMPUTER SOLUTIONS INC.,
50 Washington Terr.
East Orange, N.J.
(201) 678-6300 — (212) 349-1531

FOR SALE

1401 C-4 system for immediate delivery with features —
1060 Adv. Prog
4575 Hi-Lo Equal
5275 Mult.-Div.
5895 Pu. Fd. Rd.
5585 Pr. Stg.

1402-Mod. I
with Early Cd. Rd;
Pu. Fd. Rd;
Rpq. — Rd. Fd. Stacker Delay

1403-Mod. II & 1406 Mod. I
Also 548 interpreter, 084
— sorter

Computerworld
Box No. 3052
Principals Only

COMPLETE DATA PROCESSING SYSTEM FOR SALE UNIVAC 1004C

- Includes card processor, reader, printer, card punch plus complete peripheral equipment.
- Currently programmed and used for complete accounting and budget reporting including payroll, production, inventory control, and market analysis.

Available Immediately — \$25,000 complete

Call or write
Stanley Goldsmith, Controller
Ajax Hardware Corp.
825 So. Ajax Avenue
City of Industry, Calif. 91747
(213) 964-1261

Earnings Reports

BOOTHE COMPUTER CORP.

3 Months Ended March 31		
1969	1968	
Revenue	\$9,033,686	\$1,458,353
Earnings	711,700	176,937
Shr Ernd	.43	.07

COMPUTEST CORP.

9 Months Ended Feb. 28		
1969	1968	
Revenue	\$4,709,598	\$4,507,017
Earnings	276,795	223,843
Shr Ernd	.30	.27

a—Restated by the company to reflect the acquisition of Micro Dyne Instruments, Inc.

GENERAL ELECTRIC CO.

3 Months Ended March 31		
1969	1968	
Rev	\$2,004,560,000	\$1,940,819,000
Earnings	77,516,000	70,842,000
Shr Ernd	.86	a.79

a—Restated to reflect Federal income tax surcharge.

WESTERN UNION TELEGRAPH

3 Months Ended March 30		
1969	1968	
Earnings	\$6,800,000	\$4,300,000
Shr Ernd	.70	.37

a—Estimated by the company.

ADVANCED COMPUTER TECHNIQUES CORP.

9 Months Ended Dec. 31		
1968	1967	
Revenue	\$1,754,889	\$1,469,852
Earnings	76,287	70,689
Shr Ernd	.12	.13

RAYTHEON CO.

3 Months Ended March 31		
1969	1968	
Revenue	\$293,097,000	\$283,626,000
Earnings	7,966,000	6,676,000
Shr Ernd	.54	b.45

a—Restated to include operations of Gulf Design Corp. acquired in Nov. 1968 on a pooling-of-interests basis. b—Adjusted for 2-for-1 stock split in June 1968.

ADVANCED COMPUTER TECH.

9 Months Ended Dec. 31		
1968	1967	
Revenue	\$1,754,889	\$1,469,852
Earnings	76,287	70,689
Shr Ernd	.12	.13

COMPUTER EQUIPMENT CORP.

Year Ended Dec. 31		
1968	1967	
Revenue	\$18,365,000	\$16,131,000
Earnings	698,000	896,000
Shr Ernd	.33	.47

a—Restated by company to include acquisitions on a pooling-of-interests basis.

COMPUTER INSTALLATIONS CORP.

Year Ended Dec. 31		
1968	1967	
Revenue	\$1,183,794	\$647,550
Earnings	282,205	100,525
Shr Ernd	.54	.20

NATIONAL COMPUTER ANALYSTS, INC.

Year Ended Dec. 31		
1968	1967	
Revenue	\$1,313,004	\$1,070,938
Earnings	115,240	146,429
Shr Ernd	.14	b.23

a—Includes non-recurring start-up costs of company's proprietary system, Quick-Draw. b—Adjusted to reflect 5-for-2 stock split in Dec. 1968.

UNITED DATA CENTERS, INC.

Year Ended Dec. 31		
1968	1967	
Revenue	\$2,312,838	a1967
Earnings	69,343	
Shr Ernd	.09	

a—Report covers the first full year of operations.

RCA

3 Months Ended March 31		
1969	1968	
Revenue	\$769,900,000	\$758,200,000
Earnings	40,800,000	38,700,000
Shr Ernd	.63	.60

Orders and Installations

Marquardt Corp. of Ogden, Utah, has installed a Honeywell Model 120 computer system for general business applications.

Real Time Systems Limited of London, England, has ordered three Scan-Data Model 300 OCR systems for multifont, hand-print, multidocument loading; journal tape transport; and on-line display and character insertion.

Weirton General Hospital and Ohio Valley Hospital of Steubenville, Ohio, have ordered National Cash Register Century 100 computer systems for inpatient accounting.

County Data Processing Center in Elmira, N.Y., has installed a Univac 9300 system to expedite a number of local government operations.

S.H. Benson Ltd. of Kingsway, London, England, has ordered an International Computers Limited 1901A computer to be employed in the production of TV time booking orders from information read directly from documents marked by advertising time buyers.

The Davis-Besse Nuclear Power Station of the Toledo Edison Co., Ottawa County, Ohio, has ordered a Bailey 880 nuclear instrumentation and reactor projection system, a 721 electronic analog control system, and an 855 process computer for control of both nuclear and non-nuclear aspects of the steam supply system.

Automotive Rentals Inc. of Pennsauken, N.J., and Douglas Oil Co. of Los Angeles have ordered Honeywell Model 120 magnetic tape systems for general office purposes.

Forsvarets Fabriksverk, the National Defense Industries of Sweden, have installed an International Computers Limited 1902A computer for applications including stock control, payroll, accounting, production planning, and technical calculations.

Seventeen high schools in the Traverse Bay, Mich., area are planning to share a National Cash Register Century 100, to be located at Northwest Michigan College, Traverse City facility, for instruction in data-processing.

Caisse Regionale Credit Agricole at Privas in southwestern France and Pretorium Trust of South Africa have installed International Computers Limited 1901A systems for general business and banking purposes.

Miller Brothers Co. of Chattanooga, Tenn., has ordered a National Cash Register Century 100 computer for recording of point-of-sale data on machine-readable "optical" tape.

John Dickinson & Co. Limited of England has ordered the International Computers Limited System 4-50 computer to develop on-line control of stocks held at Dickinson's factories and depots throughout the U.K.

Cyphernetics' Goal: National Service

ANN ARBOR, Mich. — Formation of a national computer service complex, which will be made available to business and industry through a time-sharing network, has been announced.

Cyphernetics Corp., according to Charles W. Missler, president, will offer clientele an advanced time-sharing network, advanced software development, computer graphics, and computer management services.

Missler said Cyphernetics Corp. will be in full operation by June 1, with executive offices at 2290 First National Building.

Missler indicated the company will make available, through simplified languages for the non-specialist, large-scale computer power which is not subject to the many restrictions in present day, smaller time-sharing systems.

On-Site Orientation For New Subsidiary

NORTHBROOK, Ill. — Pryor Computer Industries has established a new subsidiary which will serve computer users of all sizes in the areas of systems analysis and programming, according to the company.

The new firm has been incorporated as the Pryor Computer

Software Corp., with offices at 209 S. LaSalle St., Chicago.

The firm operates as an autonomous unit of Pryor Computer Industries, and offers systems and programming services, working on-site if desired by clients.

Firm to Specialize In 'Useful' Packages

NEW YORK — The establishment of Consolidated Software Inc., a new firm specializing in software packages, has been announced.

The company will engage in the marketing of generally useful software packages, according to William G. Debs, president.

Consolidated Software was formed at the initiative of Programming Sciences, an established software firm based in New York, and will operate as a partly owned subsidiary of Programming Sciences.

The firm has acquired substantially all the assets of Software Resources Corp., and has also acquired from Programming Sciences Corp. a number of software packages developed by Programming Sciences or for which Programming Sciences has held marketing rights. Robert V. Head, who founded Software Resources, will serve as the executive vice-president of Consolidated Software.

Headquarters for the new company are at 235 E. 42nd St., New York; the Los Angeles office is at 1901 Avenue of the Stars.

New Companies

Company to Sell U.S. Programming Abroad

NEW YORK — Programming Sciences Corp. has announced that it has entered into an agreement with Great West Saddlery, an investment and holding company, to establish an equally owned international computer software and systems programming organization based in London and operating worldwide outside the United States and Canada.

The new company, to be known as Programming Sciences International, will bring advanced United States concepts of systems development to overseas users of American and European data processing equipment, according to Albert M. Loring, president.

KEYDATA INSTITUTE

The Computer Education and Training Division of KEYDATA Corporation announces a

GRAPHICS SYMPOSIUM "Interactive Graphics—Where is the Market?"

Tuesday, May 13 (The day before SJCC) 9:00-5:30
at John Hancock Hall in Boston

A Symposium designed to stimulate a fresh appraisal of the economic feasibility of interactive graphics, define the problem areas involved, and formulate future system requirements.

Welcome Address: John T. Gilmore, Jr., President of KEYDATA Corporation

PANEL MEMBERS

Moderator: Leonard M. Hantman, Vice President and General Manager of KEYDATA Associates (formerly Adams Associates)

Users:

Donald E. Hart,
General Motors
Technical Center
Walter L. Johnson,
Ford Motor Company
Dr. Leonard B. Lipson,
Lockheed—Georgia
Thurber J. Moffett,
TRW Systems
Dr. Franz F. Selig,
Mobil R&D Corporation
Dr. William R. Sutherland,
MIT Lincoln Laboratory

Consultants:

Frank S. Greatorex, Jr.,
KEYDATA Associates
John F. Martell,
The Computer Display
Review
Norman H. Taylor,
Arthur D. Little, Inc.

Manufacturers:

Dr. Robert F. Collings,
Digital Equipment
Corporation
Thomas G. Hagan,
Adage, Inc.
Donald C. Lincicome, CDC
Thomas M. Solter, Univac
Philip A. Lunday,
IBM Corporation

The registration fee of \$40 entitles each attendee to a copy of the proceedings. If you cannot attend, you may purchase the proceedings for \$25.

Open registration begins at 8:00 am. For advance registration attach this ad and your check to your letterhead and send it to:

Registrar, KEYDATA Institute, 108 Water Street, Watertown, Massachusetts 02172

EDPeople on the move



	Is Now	At	Was	At
Jack C. Roy	District Manager	Computer Usage Co., Inc. Mt. Kisco, N.Y.	Marketing Analyst	IBM
William L. Witzel	President and Director	Pharos Systems Inc. Bethesda, Md.	Director of Marketing	General Precision Link Information Sciences Div.
Ted Y. Johnson	Senior Member Advisory Staff Software Systems Div.	CTC Computer Time- Sharing Corp. Palo Alto, Calif.	Manager of Data Processing Systems	California-Western States Life Insurance Co., Sacramento, Calif.
Edward J. Shaughnessy	Vice-President Marketing	Strategic Software, Inc.	Eastern Sales Mgr. Data Products Div.	Sanders Associates
Richard J. Courtney	Systems Analyst	Strategic Software, Inc.	Senior Systems Programmer	Omega Data Systems
Bruce C. Dale	Manager, Engineering Information Processing Systems Development	Raytheon Co. Lexington, Mass.	Senior Systems Consultant	Honeywell EDP Div.
Raymond F. Forthuber	District Manager	Computer Usage Co., Inc. Baltimore, Md.	Marketing Manager	IBM
Robert C. Stark	Vice-President Manufacturing	Ty-core, Inc. Chelmsford, Mass.	Manager	Cambridge Waveguide Corp., Cambridge, Mass.
Laurence G. Brown	Vice-President Marketing	Progressive Data Management Corp. Cleveland, Ohio	Branch Manager	IBM Cleveland, Ohio
Paul Shook	Eastern Regional Manager, Brokerage Div.	Boothe Computer Corp.	Marketing Manager	Xerox Corp. Los Angeles, Calif.
V. Reed Manning	Vice-President Technology	Rixon Electronics, Inc.	Senior Staff Member	Arthur D. Little Co. Cambridge, Mass.
Robert B. Boyle	Director of Operations	Logistic Distro-Data, Inc.	Management Information Systems	Aries Corp.
Raymond L. Kirk, Jr.	Associate Director of Instruction	Computer Sciences Institute, El Segundo, Calif.	President	Research Associates, Ltd., Hawaii
John R. McKee	Financial Vice-President	Systemation, Inc. Colorado Springs, Colo.	Controller	Union Starch and Refining Co.
Irving Cohen	Vice-President	Resource Computer Corp. Los Angeles, Calif.	Vice-President	Informatics



V.R. Manning



R.C. Stark



L.G. Brown



R.B. Boyle

MICHIGAN

Ann Arbor - IBM 360-30

65k, 4 tapes, 3 disks, 2 selectors,
1 multiplex high speed printer.

Data Management, Inc.
109 East Madison
Ann Arbor, Michigan
313-761-1600

360/50 512K, 2314 disk, 9 track
tapes 800 BPI, 7070 Emulation

360/40 256K, 6 disk, 7 & 9 track
tapes - 1401 Compatibility

360/30 64K, 3 disk, 7 & 9 track
tapes - 1401 Compatibility

OS 100K partitions and remote
data entry available

Call

Data Processing Manager

313 274-3700

N.Y. AREA

COMPUTER TIME
LONG ISLAND
I.B.M. 360-20 8 K

2203 2560

PRIME TIME

HOURLY OR BLOCK TIME
PROGRAMMING AND
SYSTEMS



BUTLER COMPUTER CORP.
242 BUTLER STREET
WESTBURY, L.I., N.Y. 11590
Call Mr. D. Dunn -
516-333-6107

TIME FOR SALE

IBM 360

32K, 4 Disks, 1403, 2540. A
brand new system featuring
COBOL, FORTRAN, AS-
SEMBLER RPG, PL/I com-
plete 1401/1440/1460 com-
patibility. We have large
blocks of time available on
second and third shifts and
we will offer big discounts for
large quantity, long-term pur-
chases. Economical, plenty of
power: ideal for heavy print
jobs or for the software house
that can't afford a whole
machine. We will tailor a res-
ident pack to your require-
ments. Limited office space
may be available at reason-
able rents.

Call immediately
(212) 687-3406

TIME AVAILABLE

IBM 360/50/65/75

for further information call

(212) 867-0147
YALE INDUSTRIES CORP.
299 Madison Avenue
New York, N.Y. 10017

IBM 360/40 COMPUTER TIME FOR SALE

131K•Disks•Tapes•OS•DOS
Cobol•Fortran•and PL/1

From \$50/hr.

INFODATA SYSTEMS INC.
680 Ridge Road
Webster, New York 14580
Tele: 716-671-7700

CHICAGO AREA

360-40, 128K
1410-7010 EMULATION
1401 COMPATIBILITY
ALL 360 COMPILERS
YOUR OPERATOR OR OURS

COMPUTIME OF CHICAGO
209 WEST JACKSON
CHICAGO, ILL. 312 922-6624

WHO SAYS PEOPLE DON'T
READ CLASSIFIED ADS?

PHILADELPHIA

360 - 30, 32K with two 2415
9-track tape, three 2311 Disk
Drives and 1400 COS.

Short runs on very short notice.
Large blocks of prime time avail-
able.

Ask for Mr. Soreth or Mr. Wood.
215-WA 7-7080

FREE Write or call for cur-
rent copy of "Com-
puter Time Availabilities," a
quarterly listing of computer
time to buy and sell.
Nationwide
Computer Time Brokers
MACS
Management And
Computer Services, Inc.
104 Park Towne Place East, (CIV)
Philadelphia, Pa. 19130
215-LO 8-6800

ALABAMA

IBM 360/50

256K 4 Tapes 2314 (8 Disks)
Rates \$100-\$150 Per CPU
Hour Includes:

- Operators
- Working Tapes and Disks
- Cards and Paper Allowance

Time Available on All Shifts
All Days



General Computer
Services, Inc.
Huntsville Industrial Center
P.O. Box 4163
Huntsville, Alabama
(205) 539-9492

MASSACHUSETTS

COMPUTER SERVICE IBM 360

3 Shifts Per Day
7 Days A Week

Convenient, Full Service
128 Location

- 65K30, All Features
- 5 60KB Tapes, 7 or 9
- 3 2311 Disks
- 2 Selectors, 1 Multiplexer
- Keypunches, Verifiers, etc.
- Programmers and Operators
- Offices, Storage, Telephones
- Coffee, Complete Facilities
- Supplies and Systems
- Emergency Services
- Rates Tailored To Your Needs

INFORMATION DYNAMICS CORPORATION

80 Main St.
Reading, Mass. 01867
Telephone 617-944-2224
24 Hours A Day

CONTRACT RATES TIME FOR SALE

7 col. inch	\$63.00
6 col. inch	\$56.00
5 col. inch	\$49.00
4 col. inch	\$42.00
3 col. inch	\$35.00
2 col. inch	\$28.00
1 col. inch	\$14.00

Minimum run at these rates 13
weeks (prepaid).

SDS to Construct Facility in Maryland

ROCKVILLE, Md. — Scientific Data Systems, the California-based computer manufacturer, has announced plans for the construction of a \$2.4-million computer facility in Rockville to house SDS's Washington-based marketing, systems engineering, and customer service operations.

When completed in December 1969, the 78,000 sq ft facility will initially accommodate 200 SDS personnel involved in the analysis, design, implementation, sale, and support of computer systems for use in commercial, industrial, and defense activities.

The new facility will permit SDS to service Eastern customers more efficiently by providing a centrally located Eastern base for systems support and implementation, the company says.

Standard SDS computers shipped from the company's California plant are modified in Rockville for such applications as monitoring hospital patients in intensive care wards, processing telemetry data from aircraft and space satellite systems, controlling private and public data communication networks, signal processing, and event simulation activities.

The new facility will replace three leased plants presently being used in the Rockville area and will treble current working floor space. The new building, according to the company, will accommodate an annual equipment shipment rate of approximately \$20 million and the building's design will permit easy expansion to support \$50 million in annual shipments.

Third Center Opened

UNION TOWNSHIP, N.J. — Strategic Systems will open its third electronic data center facility in April. The center will be managed by Tom Stages, formerly with Metro Data Services.

On-Line Opens Two Offices

NEW YORK — On-Line Systems, a computer time-sharing services firm providing remote computer services to its customers by phone lines, and service to industrial and educational institutions, has opened a New York branch office

headed by John T. Coxhead. An office has also been opened in Buffalo with John R. Barrick as manager.



Cullinane Opens Office

ALEXANDRIA, Va. — Cullinane Corp. has announced the opening of a technical and marketing office at 720 N. Saint Asaph St. to be headed by new Vice-President Arthur J. Ungerleider.

Field Office Established

LOS ANGELES — Rixon Electronics has established its first field customer service office to provide efficient installations and service for Rixon equipment on the West Coast.

Management Firm to Move

BURLINGTON, Mass. — Management Center of Cambridge, an international management training firm, will move to a new 32,500 sq ft building in Vine Brook Park. In addition to housing its normal facilities, the new

PROGRAMMING SOUTHERN CALIFORNIA SENIOR PROGRAMMERS and PROGRAMMER ANALYST

Since the Records Industry Association of America started presenting gold records for single records selling a million copies, Capitol has won over 21% of the total, more than twice its nearest competition. Capitol Records, Inc., is a dynamic leader in the exciting world of entertainment.

This growth, and our diversification in other areas, necessitates expanding our Management Information Systems Staff. We have current openings for Senior Programmer Analyst, Programmer Analyst, and Senior Programmer. The individuals who fill these positions will initially be involved with the design and implementation of a nationwide inventory control system and a contract and royalty system. Our equipment includes 360-40 under DOS using a 2314 and tape files.

Our openings require 2 to 5 years programming experience, preferably utilizing COBOL and Autocoder and 360 commercial applications.

We will provide local interviews, excellent salaries and benefits, and relocation expenses. Please submit a resume detailing your experience. Include equipment, languages, and applications, and your salary history.

Mr. R. H. Scudder, Dept. D-N-12
CAPITOL RECORDS, INC.*
1750 No. Vine Hollywood, Calif. 90028
*A Subsidiary of Capitol Industries, Inc.
An equal opportunity employer

ASSISTANT MANAGER

Our data processing department will continue to grow rapidly for the same reason it doubled in size last year.

To help us with this expansion, we are seeking an individual to assist in the direction of departmental personnel, coordinate and implement major changes, and assist in the development of new areas for equipment utilization.

We require an individual with a college degree and sufficient third generation experience to manage programming, systems, and operations personnel.

Salary range — \$13,000 to 14,000

Mail resume to

Sagner, Inc.

1 Sagner Avenue
Frederick, Maryland 21701

COMPUTER PRODUCT MANAGER

Leading SCIENTIFIC INSTRUMENT MANUFACTURER is seeking an experienced Marketing/Sales Executive to help lead its penetration into the Scientific Computer Market. Requirements are Scientific Degree; 4-6 years experience in Computer Marketing and Management.

Please send confidential resume to:
CW Box #3051

an equal opportunity employer

VICE PRESIDENT FINANCE

Outstanding opportunity for CPA and/or LLB experienced in financial analysis to join a profit and growth-oriented management team specializing in information technology. Responsibilities will cover parent company and subsidiaries and include establishing and administering budgetary controls, managing investments, handling acquisitions, and long-range planning. Preferred qualifications include several years experience with national accounting firm and controller type assignment with service-oriented firm. Attractive salary, profit-sharing, and stock options.

Reply in confidence to President Box 3054, COMPUTERWORLD

PROGRAMMING SUPERVISOR

We are seeking an outstanding individual to join our young and aggressive management team. Our company, located in the Mid West, is in consumer product & contract manufacturing and marketing.

The successful candidate will have a thorough knowledge in programming for the IBM-360 with a working knowledge of computer systems and at least 2 years as a senior programmer.

Our programming supervisor is responsible for the management of all programming, establishing and maintaining all computing standards.

Please send resume and salary requirements in complete confidence to Box 3053.

An equal opportunity employer

POSITION ANNOUNCEMENTS

EDP PROFESSIONALS

We are looking for
the best in the
computer
industry...
people who are
not looking for us.

If you are now successful in your job in the EDP industry we have some thoughts for you. Our organization, WCP, represents many top firms who are now working on stimulating data processing projects... they are innovators working with third generation hardware with an eye to the coming generation.

Ask yourself a few questions. How far can you go in your present position... Where do you want to be in the industry and community in 10 years? What does your family look for in the future? Perhaps we can help you answer these questions, counsel you on your future professional growth. If you are interested in yourself call Mr. James O'Brien, (415) 328-4126. He is interested in you. We are a recruitment counseling agency.



525 University Ave.
Palo Alto, California 94301

WCP

NEW AND GROWING JUNIOR COLLEGE 90 miles southwest of Chicago needs data processing instructor in two-year curriculum which trains programmers and programmer-analysts. Prefer Master's Degree and recent business or industrial experience. Bachelor's Degree and experience acceptable. Previous teaching experience not necessary. Salary to \$16,000. Benefits include paid hospital and medical insurance, excellent retirement system, academic and cultural advantages of college community. Will join four-man staff in department. Contact Dr. John Hawse, Director of Tech.-Voc. Education, Illinois Valley Community College, Route 1, Oglesby, Illinois 61348.

SENIOR PROJECT LEADER

Internationally known Boston-based manufacturing company is seeking an aggressive individual to head up a group of SYSTEMS/PROGRAMMERS on a large I.B.M. installation. Applications should include some of the following: Financial Systems, Payroll, Cash Flow, General Ledger and Investment. This is a key position which affords excellent professional growth potential.

SALARY & STOCK OPTIONS 17 to 19k.

Also we have several openings for PROGRAMMERS/ANALYST, COBOL or B.A.L. a must, in either a manufacturing or financial environment.

SALARY & STOCK OPTIONS 11 to 15k

Please send resumes to
P.O. Box #71, NEWTON, MASSACHUSETTS 02166

All inquiries will be answered.

COMPUTER LEASING

Our Financial Services Division can offer you significant cash savings through a profitable purchase-leaseback arrangement on your IBM System/360.

Send your systems configurations to Mr. Michael Creedon, Vice President, for immediate analysis and evaluation. Or phone him at 212-889-1800.

Commission Brokers Invited

FINANCIAL SERVICES DIVISION

dis Diversified Data Services and Sciences Inc.
660 Madison Avenue • New York, New York 10021

SOFTWARE PROTECTION WORKSHOP

June 2-4, Washington, D.C.

Practical know-how and details of patent, trade secret, and government and private contract protection for computer programs. Oriented toward needs of lawyers serving computer users and software and hardware manufacturers.

Faculty includes leading legal and computer authorities under the direction of Professor Irving Kayton of the George Washington University Computers-In-Law Institute, and Howard R. Popper of Bell Telephone Laboratories.

For brochure and registration form write:

PATENT RESOURCES GROUP

2011 Eye Street, Suite 800
Washington, D.C. 20006

COMPUTERS FOR SALE

1. 1401 C 3 - 4 K \$39,500.00
2. 7330 Tape Drives - Quan. 8 Immediately
3. 1401 C - 4 (8K) System will take 729 Drives
(IBM M/A available on above)

COMPUTER WANTED

1401 Systems wanted now, or will purchase now and lease back for later delivery.

UNIT RECORD FOR SALES with IBM M/A

1. 407 A-1, 407 A-2, & 407 A-3
2. 402 A-1, 403 A-1
3. 082 ss Aux. cc or 083's
4. 519 10 pos. punch feed mark sense

IBM UNIT RECORD WANTED

NEED IMMEDIATELY, Key punches, Verifiers, Collators, Sorters, Reproducers, and Interpreters with or without IBM M/A

IBM UNIT RECORD FOR LEASE

1. 407 A2 30 mo. lease/purchase @ \$600.00 IBM M/A
2. 402 A1 24 mo. lease/purchase @ \$300.00 IBM M/A
3. 403 A1 24 mo. lease/purchase @ \$325.00 IBM M/A



DATA AUTOMATION SERVICES, INC.

4858 CASH ROAD DALLAS, TEXAS 75247

AC 214 637-6570

Afips Records Called Inadequate 15% of Assets Are Not Verified

DETROIT — Major inadequacies in accounting records, doubt about the existence of some assets, and the lack of any formal set of books or of any audit by an independent certified public accountant were revealed in a report on the American Federation of Information Processing Societies by Jerome J. Ettinger, C.P.A. The report to the Afips Executive Committee and the Afips Board of Directors came to light last week.

Ettinger said that beginning balances for a newly established general ledger had to be developed simply from documents, work papers, etc., and from the financial statements rendered by Thomas J. Byron, Jr., of Concord, Mass., the organization's previous auditor.

Bruce Gilchrist, Afips executive director told CW that Afips officials were quite convinced that all the assets did in fact exist and that the auditor's comments had merely been typical of the type of comment involved when a new auditor took over a set of accounts. He said that the comments had been very helpful to Afips and that Afips intended to improve many of its procedures to match the wishes of the new auditor.

"We are a growing organization and this is typical of a growing organization's problems," he said.

Byron, contacted by *Computerworld*, said no one had asked his firm for any assistance or had queried any of its entries. "We have all our working papers and are quite ready to substantiate our entries," he said.

The new auditor said that 85% of the assets had been verified but left the fate of the other 15% — worth about \$100,000 — up in the air.

Asked about the fact that there was no general ledger, Byron said this was true but said he believed that the documents which had been kept by successive treasurers had been in adequate detail to permit proper audits. The work in his office had been handled by certified accountants, he said, and he pointed out that as a registered auditor with more than 20 years of experience, he was able to issue both certified and uncertified accounts. He also pointed out that Afips had successfully gone through two IRS audits "which were in some depth."

Ettinger reported that as well as Afips itself, the records of the 1967 fall and 1968 spring joint conference disbursements had been examined and, "in most cases," disbursements were supported by signatures of committee members authorized to approve them. No reference was made to the number of un-

ported disbursements nor to the amount of money involved in such expenditures.

The report also revealed that Simulation Councils had borrowed \$15,000 from Afips late in 1967 for a one-year period. Simulation Councils cast one of the three votes needed to pass the new Afips constitution in January.

A special appropriation for member societies netted ACM a windfall of \$86,000 and Simulation Councils just over \$16,000 just prior to the vote. This was in addition to the normal appropriations of approximately \$40,000 and \$8,000 respectively, which would have been made in any case. Simulation Councils repaid its \$15,000 loan, and the ACM used the windfall to try, unsuccessfully, to survive the year's financial storms.

Afips, at the end of 1968 after allowing for the special distribution, apparently had a retained balance of \$150,000 as far as the books were concerned.

Previous audits had been provided regularly by Byron and, according to his reports, were based on "the books, records, correspondence, and treasury memorandum." This was stated to have been in accordance with generally accepted auditing standards and to have included the tests of accounting records that Byron considered necessary.

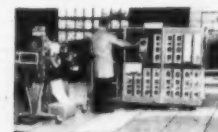
COMPUTER HARDWARE CONSULTANTS AND SERVICES, INC.



Tabulator Processing



15,000 Sq. Ft. of manufacturing area



Computer Processing

CHC and S, a tiny but growing factor in the computer field, offers you, the owner of computer equipment, originally manufactured by I.B.M., a complete facility to process your equipment, to include reconditioning, refurbishing, feature change, model change, and staging. Inexpensive? Not necessarily. We strive for perfection and your complete satisfaction.

When you decide to buy used equipment originally manufactured by I.B.M. for either resale, to lease, to use in your own company, or to move to another location, USE OUR CONSULTING SERVICE. Our removal and condition audit inspection criterion is rugged but who else should have demanding ground rules, except maybe your banker.

Why are we singing? It was our pleasure putting our facility together for you. Now we will do almost anything to please you.



COMPUTER HARDWARE CONSULTANTS & SERVICES, INC.

1409 EASTON ROAD
WARRINGTON, PA. 18976
(215) DI 3-1430

